

November 25, 1998

EA-98-505

Mr. Walter G. MacFarland IV  
Senior Vice President  
Clinton Power Station  
Illinois Power Company  
Mail Code V-275  
P. O. Box 678  
Clinton, IL 61727

SUBJECT: CLINTON INSPECTION REPORT 50-461/98019(DRS) AND  
NOTICE OF ENFORCEMENT DISCRETION

Dear Mr. MacFarland:

On October 9, 1998, the NRC completed an engineering and technical support (E&TS) inspection at your Clinton Power Station (CPS). The purpose of the E&TS inspection was to evaluate the effectiveness of your engineering organization in performing routine and reactive site activities, including controls for the identification, resolution and prevention of technical issues and problems that could degrade the quality of plant operations or safety. In addition, selected items of the Clinton Restart Action Plan for Design and Configuration Control (Case Specific Checklist Matrix Items VI.1, VI.2 and VI.3) were reviewed. The enclosed report presents the results of that inspection.

Overall, the E&TS inspection team concluded that your engineering staff was effective in the identification of technical problems. Based on a review of selected system modifications, the team did not identify additional problems that had not been previously identified by your organization. Self-assessments exhibited a pro-active trend in the attempt to disclose performance problems within the engineering organization. The technical quality of the selected engineering reviews was generally sound. Based on a review of the status of your efforts to address the restart case specific checklist items, the team concluded that additional work remained before the items were ready for closure by the NRC.

We are concerned, however, about one violation of NRC requirements that pertained to a self-revealing event involving the loss of the residual heat removal (RHR) system suppression pool cooling (SPC) capability. Specifically, the installation of minor modification ECN 30211, "Install Annunciator Bypass Switch," changed the RHR system's original configuration such that a complete loss of SPC could occur during a design basis accident. The failure to identify, during the modification review process, that a change to the plant's original design basis occurred constitutes a significant concern because the review process was established to prevent such occurrences. There have been similar occasions where your staff did not recognize during the design change process that a change to the original design basis had occurred which resulted in CPS's inability to meet NRC requirements (e.g., Inspection Report 50-461/98014(DRP) dated September 17, 1998, pertaining to the operability of the Division III

Emergency Diesel Generator). The failure to identify that a minor modification placed the plant in a condition that was outside the plant's original design basis was a violation of the requirements of 10 CFR Part 50, Appendix B, Criterion III, "Design Control."

However, I have been authorized, after consultation with the Director, Office of Enforcement and the Acting Regional Administrator, to exercise enforcement discretion for this violation in accordance with Section VII.B.2, "Violations Identified During Extended Shutdowns or Work Stoppages," of NUREG 1600 "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), and not issue a Notice of Violation in this case. The decision to apply enforcement discretion was based on consideration of the following: (1) significant NRC enforcement action was previously taken against the Illinois Power Company for design control problems; (2) additional enforcement action was not considered necessary to achieve remedial action for the violation due to CPS's commitment in its Plan For Excellence to take actions to address design control issues prior to plant restart; (3) the violation was related to problems which were present prior to the events leading to the shutdown; (4) the violation was not classified at a severity level higher than Severity Level II; (5) the violation was not willful; and (6) CPS must provide reasonable assurance that safety-related systems, structures and components will perform their intended safety functions as described in the design and licensing basis prior to plant restart as noted in the NRC Manual Chapter 0350 Restart Panel's Case Specific Checklist, Item VI.1. Effective corrective actions for the violation will need to be demonstrated prior to restart.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

Original /s/ Marc L. Dapas

Marc L. Dapas, Deputy Director  
Division of Reactor Projects

Docket No.: 50-461  
License No.: NPF-62

Enclosure: Inspection Report 50-461/98019(DRS)

See Attached Distribution

cc w/encl: G. Hunger, Station Manager  
R. Phares, Manager, Nuclear Safety  
and Performance Improvement  
J. Sipek, Director - Licensing  
N. Schloss, Economist  
Office of the Attorney General  
G. Stramback, Regulatory Licensing  
Services Project Manager  
General Electric Company  
Chairman, DeWitt County Board  
State Liaison Officer  
Chairman, Illinois Commerce Commission

Emergency Diesel Generator). The failure to identify that a minor modification placed the plant in a condition that was outside the plant's original design basis was a violation of the requirements of 10 CFR Part 50, Appendix B, Criterion III, "Design Control."

However, I have been authorized, after consultation with the Director, Office of Enforcement and the Acting Regional Administrator, to exercise enforcement discretion for this violation in accordance with Section VII.B.2, "Violations Identified During Extended Shutdowns or Work Stoppages," of NUREG 1600 "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), and not issue a Notice of Violation in this case. The decision to apply enforcement discretion was based on consideration of the following: (1) significant NRC enforcement action was previously taken against the Illinois Power Company for design control problems; (2) additional enforcement action was not considered necessary to achieve remedial action for the violation due to CPS's commitment in its Plan For Excellence to take actions to address design control issues prior to plant restart; (3) the violation was related to problems which were present prior to the events leading to the shutdown; (4) the violation was not classified at a severity level higher than Severity Level II; (5) the violation was not willful; and (6) CPS must provide reasonable assurance that safety-related systems, structures and components will perform their intended safety functions as described in the design and licensing basis prior to plant restart as noted in the NRC Manual Chapter 0350 Restart Panel's Case Specific Checklist, Item VI.1. Effective corrective actions for the violation will need to be demonstrated prior to restart.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

Marc L. Dapas, Deputy Director  
Division of Reactor Projects

Docket No.: 50-461  
License No.: NPF-62

Enclosure: Inspection Report 50-461/98019(DRS)

See Attached Distribution

DOCUMENT NAME: G:\DRS\CLI98019.wpd **\*SEE PREVIOUS CONCURRENCE**

To receive a copy of this document, indicate in the box "C" = Copy w/o attach/encl "E" = Copy w/attach/encl "N" = No copy

OFFICE	RIII *	E	RIII *	E	RIII *		RIII *		RIII	
NAME	GHausman/sd		RGardner		TKozak		BClayton		MDapas	
DATE	11/19/98		11/19/98		11/ /98		11/ /98		11/ /98	

**OFFICIAL RECORD COPY**

cc w/encl: G. Hunger, Station Manager  
R. Phares, Manager, Nuclear Safety  
and Performance Improvement  
J. Sipek, Director - Licensing  
N. Schloss, Economist  
Office of the Attorney General  
G. Stramback, Regulatory Licensing  
Services Project Manager  
General Electric Company  
Chairman, DeWitt County Board  
State Liaison Officer  
Chairman, Illinois Commerce Commission

Distribution:

J. Lieberman, OE w/encl  
J. Goldberg, OGC w/encl  
B. Boger, NRR w/encl  
Project Mgr., NRR w/encl  
J. Caldwell, RIII w/encl  
C. Pederson, RIII w/encl  
B. Clayton, RIII w/encl  
SRI Clinton w/encl  
DRP w/encl  
TSS w/encl  
DRS (2) w/encl  
RIII PRR w/encl  
PUBLIC IE-01 w/encl  
Docket File w/encl  
GREENS  
IEO (E-Mail)  
DOCDESK (E-Mail)

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>2</b>
<b>E1 Conduct of Engineering</b>	
E1.1 Review of Design Changes, Modifications and Technical Issues	4
E1.2 Safety Screenings and Evaluations	9
E1.3 Assessment of the Shutdown Service Water System	10
E1.4 Adequacy and Control of Calculations	11
E1.5 Adequacy and Control of the Setpoint Program	12
<b>E3 Engineering Procedures and Documentation</b>	
E3.1 Condition Reports	13
E3.2 Post/Stamp Affixed Program	13
E3.3 Surveillance Procedures	14
E3.4 System Health Report	15
<b>E5 Engineering Staff Training and Qualifications</b>	
E5.1 System Engineering	16
<b>E8 Miscellaneous Engineering Issues</b>	<b>17</b>
<b>M2 Material Condition of Facilities and Equipment</b>	
M2.1 Plant Walkdowns	22
<b>X1 Exit Meeting Summary</b>	<b>22</b>
<b>Partial List of Persons Contacted</b>	<b>23</b>
<b>Inspection Procedures Used</b>	<b>24</b>
<b>Items Opened, Closed or Discussed</b>	<b>25</b>
<b>List of Acronyms Used</b>	<b>27</b>
<b>Partial List of Documents Reviewed</b>	<b>28</b>

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-461  
License No: NPF-62

Report No: 50-461/98019(DRS)

Licensee: Illinois Power Company

Facility: Clinton Nuclear Power Station

Location: Route 54 West  
Clinton, IL 61727

Dates: September 14 - October 9, 1998

Inspectors: G. Hausman, Team Leader  
J. Neisler, Team Member  
D. Schrum, Team Member  
T. Tella, Team Member  
A. Walker, Team Member

Approved by: R. Gardner, Chief,  
Engineering Specialist Branch 2 (ESB2)  
Division of Reactor Safety

## EXECUTIVE SUMMARY

Clinton Nuclear Power Station, Unit 1  
NRC Inspection Report 50-461/98019

An announced five member team inspection was performed from September 14 through October 9, 1998. The team reviewed the engineering and technical support (E&TS) organization's effectiveness in the performance of routine and reactive site activities, including controls for the identification, resolution and prevention of technical issues and problems that could degrade the quality of plant operations or safety. In addition, the team reviewed selected items of the Clinton Restart Action Plan for Design and Configuration Control (Case Specific Checklist Matrix Items VI.1, VI.2 and VI.3). As a result of this inspection, one violation and one non-cited violation (NCV) of Nuclear Regulatory Commission (NRC) requirements were identified.

### Engineering

- ! Overall, the E&TS inspection team concluded that the engineering staff was effective in the identification of technical problems. Based on their review of selected system modifications, the team did not identify additional problems that had not been previously identified by the licensee. The team concluded that the system design and functional verification (SDFV) program reviews conducted on the residual heat removal and shutdown service water (SX) systems identified significant issues and the quality of those reviews was considered excellent. As a result of these reviews, however, a significant amount of corrective action work was identified that needed to be completed prior to restart. Through self-assessments, the licensee exhibited a pro-active trend in the attempt to disclose performance problems within the engineering organization.
- ! The team concluded that no major problems existed with the hardware change process or with the selected hardware changes reviewed that had not been previously identified by the licensee. The technical quality of the selected engineering work products was generally sound and the hardware changes reviewed were adequately implemented. A violation for which enforcement discretion was exercised was identified involving the installation of a minor modification which caused the loss of suppression pool cooling. An NCV was identified regarding the licensee's failure to take adequate and timely actions for excessive silt accumulations in the SX pump intake area. Present performance by the licensee on the SX system was excellent. However, the team noted that the licensee had not generated maintenance work requests (MWRs) or preventive maintenance tasks to assure replacement of limited life non-environmentally qualified equipment in the plant. The team considered this a weakness. (Section E1.1)
- ! The team concluded that the licensee had an acceptable 10 CFR 50.59 program and that qualified personnel prepared and reviewed the 10 CFR 50.59 screenings and safety evaluations. The team also concluded that the 10 CFR 50.59 screenings and safety evaluations reviewed were adequate with the exception of some minor errors. Although no specific issues were identified by the inspectors, the number of licensee identified condition reports (CRs) concerning safety screenings and evaluations revealed that problems still exist. (Section E1.2)



- ! The inspectors concluded that the SX system design and configuration controls were adequate. The SDFV assessment of the SX system was very comprehensive and thorough. The team concluded that actions taken as the result of the SDFV assessment would correct many operational problems and concerns with the SX system. (Section E1.3)
- ! The team concluded that the licensee's revised methodology for reviewing calculations in order to determine the technical adequacy of the CPS calculation program was satisfactory. However, insufficient activities were completed by the licensee at the conclusion of this inspection to support an adequate review by the NRC. As a result, the inspection of this issue could not be completed during the E&TS inspection. (Section E1.4)
- ! The team concluded that the licensee's Setpoint Program Action Plan methodology was sound. However, insufficient activities were completed by the licensee at the conclusion of this inspection to allow for an adequate review by the NRC. As a result, the inspection of this issue could not be completed during the E&TS inspection. (Section E1.5)
- ! In most instances, the corrective action process for the CRs selected for review was adequately implemented and resulted in acceptable corrective actions. (Section E3.1)
- ! The team concluded that the lack of a setpoint control program and a lack of trending of safety-related and maintenance rule-related instrument drift was a weakness. The team also concluded that lack of supporting calculations for important instrument setpoints was a weakness. (Section E3.3)
- ! Based on their system reviews, the team concluded that the System Health Report provided an accurate accounting of system status with regard to the numbers of CRs, MWRs, etc. No major discrepancies were identified with the System Health Report for the systems reviewed. The automatic depressurization system status could not be reviewed since the system was not addressed in the System Health Report. (Section E3.4)
- ! The team concluded that the system engineers were generally qualified and experienced. However, the team identified a weakness in that detailed training was not provided to the system engineers for their assigned systems. On October 10, 1998, the team was notified that system engineers would receive senior reactor operator system training for their assigned system(s). (Section E5.1)
- ! The material condition of the walked down systems appeared to be good. The system engineers appeared to be knowledgeable of the systems. (Section M2.1)

## **Report Details**

### **III Engineering**

The purpose of this inspection was to review Clinton Power Station (CPS) activities in the areas of engineering and technical support (E&TS) and the status and effectiveness of licensee actions to address selected CPS Restart Action Plan Matrix Items. The inspection team focused on selected engineering design changes, modifications and technical issues related to the automatic depressurization system (ADS), direct current (DC) electrical distribution system, high pressure core spray system (HPCS), residual heat removal (RHR) system and the shutdown service water (SX) system. For the selected engineering work activities, the inspection team assessed engineering staff involvement in root cause analysis, 50.59 safety evaluations, operability assessments, trending, surveillance and post-modification testing (PMT), control and revision of drawings, the corrective action process, maintaining the licensing basis and Updated Safety Analysis Report (USAR) commitments. In addition, CPS Restart Action Plan Case Specific Checklist Matrix Items VI.1, VI.2 and VI.3 were reviewed.

#### **E1 Conduct of Engineering**

##### **E1.1 Review of Design Changes, Modifications and Technical Issues**

###### **a. Inspection Scope (IP37550; IP37700)**

The team examined electrical, mechanical, and control and instrumentation hardware changes (i.e., design changes and modifications) in various stages of implementation and other technical issues. The methods used to control hardware changes at CPS were reviewed to verify adequacy of control and compliance with regulatory requirements. The team's review included permanent and temporary hardware change packages, condition reports (CRs), safety reviews, operability determinations and screenings, plant safety tagging, self-assessments and applicable CPS procedures. The selected hardware changes and technical issues were discussed with cognizant licensee personnel and the inspectors walked down selected accessible portions of the affected systems. In addition, the team reviewed selected calculations and setpoint/scaling change requests which supported the plant system hardware changes.

###### **b. Observations and Findings**

At the CPS, major and minor hardware changes were identified as modifications and engineering change notices (ECNs), respectively. As part of the inspection process, the team's review included both modifications and ECNs. The team reviewed the following selected modifications and ECNs to determine whether the licensee adequately implemented the proposed hardware change design, installation, and testing requirements and documented the required reviews and approvals:

## Loss of Suppression Pool Cooling

A minor modification placed the plant in a condition that was outside the plant's original design basis. ECN 30211, "Install Annunciator Bypass Switch," was developed and installed in response to a 10 CFR Part 50, Appendix R "hot short" concern identified in CR 1-97-06-181, "Inadequate 8 Hour Battery Powered Emergency Lighting," dated June 17, 1997. The ECN and its associated procedure revisions closed the normally open RHR shutdown cooling suction valve 1E12-F006B, removed power to the F006B valve by opening the supply breaker and bypassed the valve's associated control room annunciator to prevent nuisance (i.e., open supply breaker) alarms. The licensee had the option of providing an Appendix R emergency light for the manual operation of the F006B valve. Normally, a hot short fix does not prevent a hot short from repositioning the valve, but rather it prevents the valve from being damaged due to bypass of the limit and torque switches. However, this ECN removed the power to prevent any movement of the valve during a fire.

The installation of the ECN began July 7, 1997, and the RHR B loop was declared operable on July 15, 1997, for an anticipated plant startup date of August 1, 1997. The design change activities resulted in the inability to operate the RHR B loop in the suppression pool cooling (SPC) mode and was discovered when operators were unable to initiate SPC from the main control room during performance of CPS Procedure 3312.01, "Residual Heat Removal" on December 22, 1997. The operator's inability to initiate SPC was due to the loss of control power to the interposing relay (ECN opened the F006B supply breaker) which controlled the F006B valve interlocks associated with RHR suppression pool suction motor-operated gate valve F004B and test return to suppression pool valve F024B. The F006B valve was interlocked with the F004B and F024B valves to prevent an accidental reactor vessel drain down. A reactor vessel to suppression pool drain down flow path could exist if the F006B valve was open and the other two valves were not interlocked closed. However, with the interposing relay de-energized, the F004B and F024B valves could not be opened to establish SPC.

The safety significance of an inoperable RHR B Loop was not fully identified until August 18, 1998, as documented by CR 1-98-08-206, "Missed Design Impact May Affect RHR B Suppression Pool Cooling," Revision 0. During a design basis loss-of-coolant accident (LOCA) scenario, a complete loss of SPC would have occurred. The plant's design basis assumed a Division A diesel generator failure (single failure criterion), which would have made the RHR A Loop inoperable. The RHR C Loop was not designed for SPC and the RHR B Loop was not available as a result of ECN 30211. In addition, radiation levels during the LOCA would have prevented manual actions (i.e., opening valves F004B and F024B (1000R/Hr) or closing the F006B supply breaker (100-500R/HR)) to restore SPC. The failure to identify, during the modification review process, that a change to the plant's original design basis occurred constitutes a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" (VIO 50-461/98019-01), which requires that measures be established to assure that applicable regulatory requirements and the design basis as specified in the license application, for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions.

The licensee failed to identify the design problem during the modification process. In addition, it was not identified when the licensee performed a 10 CFR 50.59 safety evaluation for this modification. The licensee failed to identify this condition during PMT because only valve stroking was performed. A contributing cause was a non-standard interlock design with the interposing relay control power supplied from the supply breaker for valve F006B.

The licensee's immediate corrective action was to invoke a mode 1, 2 and 3 restraint on December 22, 1997. The licensee performed a modification to remove the interlocking relays and replace them with hard contact limit switches on the motor-operated valve operators. In addition, the licensee's corrective actions included implementation of a Senior Engineering Review Group overview function to review selected engineering work products. The engineering organization was augmented with personnel experienced in the evaluation and maintenance of plant design bases. Engineering personnel were provided with training on the lessons learned from this issue. Finally, a new engineering leadership team was established to focus on critical assessment and ongoing maintenance of the plant design bases.

The failure to identify that a modification placed the plant outside of the design basis was a violation of 10 CFR Part 50, Appendix B, Criterion III; however, enforcement discretion was applied based on the following: (1) significant NRC enforcement action was previously taken for design control problems; (2) additional enforcement action was not considered necessary to achieve remedial action for the violation due to CPS's commitment in its Plan For Excellence to take actions to address design control issues prior to plant restart; (3) the violation was related to problems which were present prior to the events leading to the extended shutdown; (4) the violation was not classified at a severity level higher than Severity Level II; (5) the violation was not willful; and (6) CPS committed to provide reasonable assurance that safety-related systems, structures and components will perform their intended safety functions as described in the design and licensing basis prior to plant restart as noted in the NRC Manual Chapter 0350 Restart Panel's Case Specific Checklist, Item VI.1.

### **Degraded Voltage Modification**

The inspector reviewed modification packages for the installation of Static Volt Ampere Reactive (VAR) Compensators (SVCs) and the replacement of non-regulating 480/208/120 Volt distribution transformers. In addition, the inspector observed installation activities at the work locations.

Per the CPS design basis, CPS should have two offsite power sources with adequate capacity and capability to provide reliable power to the plant under all operating conditions. The licensee determined that the offsite power sources were no longer capable of supplying reliable power under degraded grid voltage conditions when plant loads were served through the reserve auxiliary transformer (RAT) and/or the emergency reserve auxiliary transformer (ERAT). As a result of the degraded voltage issue, the RAT and ERAT were placed in a Technical Specification (TS) inoperable condition.

The licensee's corrective action was to replace the ERAT with a new transformer that had automatic tap changing capability. Non-regulating 480/208/120 Volt distribution transformers were replaced with voltage regulating transformers. The SVCs were being installed on the low sides of both the RAT and ERAT. The SVCs being installed at each transformer had a 28.5 mega-VAR (MVAR) capacitive and 14 MVAR inductive rating. The licensee's calculations indicated that this rating was sufficient to maintain in-plant voltages above minimum design levels.

The licensee determined that the installation of this modification could constitute an unreviewed safety question (USQ). The USQ evaluation was forwarded to the NRC Office of Nuclear Reactor Regulation (NRR) for review. The results of the NRC's review had not been completed by the end of this inspection.

### **DC Battery Charger Modifications**

The licensee issued ECNs 30992, 30660, 30699, and 30430 to provide schematic and wiring diagram changes for changing the tap settings for the divisional battery charger power supply transformers. The tap settings were based on Calculation 19-AK-13, Revision O, Volume A, which assumed the tap settings would be set at 470 Volts to ensure that minimum required voltages would be available to the battery charger during normal and degraded voltage conditions. The team verified that safety evaluation screenings had been performed, calculations had been reviewed, and applicable drawings were included with the ECN packages. In addition, engineering personnel had ensured that appropriate PMT requirements were included in the work packages.

The licensee developed ECN 30445 to change the high voltage shutdown card reset point from 132 volts to 135 volts which allowed the card to reset during charger surveillances when voltage spikes may occur. The ECN also changed the surveillance data sheet to reflect the reset change and the associated reset delay time from 30 seconds to a nominal 10-15 second time delay. The inspectors verified that the licensee's staff had performed appropriate engineering evaluations and that the revised changes had been incorporated into the applicable data sheets and specification (K2989). A detailed PMT was included in the change package.

### **Valve and Alarm Setpoint Modifications**

The team reviewed several completed hardware change packages related to ADS valve and alarm setpoint changes. The following documents were reviewed by the team:

- ! Modification 1IA-021, "Reposition Valve Limit and Torque Switches for Valves 1IA-012A and 1IA-013A,"
- ! ECN 27675, "Replacement of Target Rock Valves 1IA-044A and 1IA-044B,"
- ! ECN 28365, "Increase of Stroke Time of Valve 1IA-013B" and

! ECN 30225, "Revision of ADS Instrument Air Header Low Pressure Alarm Setpoint."

The hardware change packages clearly described the proposed design changes and justification for the changes. The modification package contained an adequate 10 CFR 50.59 safety evaluation. The ECN packages contained necessary safety screenings. The affected drawings and the required USAR changes were noted in the design packages. The PMT was performed as necessary.

### **Replacement of Limited Life Equipment**

While reviewing ECN 30225, the team noted that ADS differential pressure switches IPS-IA084 and 085 (ITT Barton type 580A) had an approved life of 20 years. These switches were not required to be included in the station's environmental qualification (EQ) program. However, the need to replace these maintenance rule-related switches was not specified in any preventive maintenance (PM) procedure or a maintenance work request (MWR). The lack of specific procedures for replacing limited life non-EQ plant equipment was considered a weakness in the licensee's PM program.

### **Excessive Silt Accumulations in the SX Pump Intake Area**

In August 1992, during a licensee assessment of the CPS program for Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment," dated July 18, 1989, quality assurance (QA) personnel identified the need to establish acceptance criteria for the levels of silt and other potential fouling mechanisms in the SX pump intake area. On several occasions excessive silt had been observed by licensee personnel and removed from the screen house area. However, the criteria as to what constituted acceptable silt levels had not been established since CPS began operation. No written response was required for the identified QA concern and no action was taken to address the issue.

During the licensee's integrated safety assessment (ISA) review of CPS GL 89-13 Program in 1997, criteria for acceptable silt levels were again questioned for the SX intake area. This concern was identified in CR 1-97-10-054, "Indeterminate Condition Because of Silt in the SX/Unit 1 FP [Fire Pump] Bay Area of the Screen House," dated October 3, 1997. In response to this concern, the maximum acceptable silt levels were calculated. The licensee determined that existing silt levels exceeded the calculated maximum levels and that Division 1 and Division 2 SX pumps were inoperable. As a result of the inoperable pumps, Licensee Event Report (LER) 461/97-026, "Inadequate Procedure for Inspection of Shutdown Service Water Pumps for Excess Silt Results in Shutdown Service Water Pump Inoperability," was issued on March 3, 1998.

In response to the LER, licensee personnel promptly removed silt accumulation from the area to meet acceptable levels. In addition, CPS Procedure 2400.01, "Corbicula (Asiatic Clam) Control," was revised to require the inspection for and removal of silt accumulations in excess of acceptable levels. The procedure also required a yearly inspection for accumulation of silt and other fouling agents and removal of the accumulations as needed.

Criterion XVI of 10 CFR Part 50 requires that conditions adverse to quality be promptly identified and corrected. The failure to take adequate and timely action to correct the SX pump intake silting problem, which was identified as early as 1992, is considered a corrective action violation (NCV 50-461/98019-02(DRS)). Since the problem was non-repetitive, identified by the licensee and necessary actions to correct and prevent recurrence of the violation had been completed, this violation is being treated as a NCV, consistent with Section VII.B.1 of the NRC Enforcement Policy and no response is required.

### **SX Flow Balancing Without Backwash Flow Considerations**

During flow balance testing of the Division 1 SX system on September 11, 1998, licensee personnel noted that, with strainer backwash in service, flow to several of the SX loads was below required minimums. Condition Report 1-98-09-201 was written to address the problem. During the team's review of this issue, the inspectors noted that the licensee had concluded in Operability Determination 1-98-09-201-O, that the reduced flow was not great enough to substantially affect the short term operability of the affected equipment. The team determined that the licensee's conclusions were adequately justified.

#### **c. Conclusions**

The team concluded that no major problems existed with the hardware change process or with the selected hardware changes reviewed that had not been previously identified by the licensee. The technical quality of the selected engineering work products was generally sound and the hardware changes reviewed were adequately implemented. A violation for which enforcement discretion was exercised was identified involving the installation of a minor modification which caused the loss of SPC. An NCV was identified regarding the licensee's failure to take adequate and timely actions for excessive silt accumulations in the SX pump intake area. Present performance by the licensee on the SX system was excellent. However, the team noted that the licensee had not generated MWRs or PM tasks to assure replacement of limited life non-EQ equipment in the plant. The team considered this a weakness.

### **E1.2 Safety Screenings and Evaluations**

#### **a. Inspection Scope (IP37001)**

The team reviewed the implementation of the 10 CFR 50.59 program including procedures for screening changes, tests, and experiments and preparing safety evaluations; the processes for maintaining records, updating the USAR, and reporting to the NRC; and the training and qualifications of 10 CFR 50.59 screening and safety evaluation preparers. The team's review consisted of a selected sample of 10 CFR 50.59 screenings and safety evaluations, where emphasis was placed on the design change process.

#### **b. Observations and Findings**

Overall, the team determined that the screenings and safety evaluations were appropriately prepared and were consistent with licensee procedures. In particular, the team determined that the preparers reviewed appropriate documents during the preparation of 10 CFR 50.59 screenings and safety evaluations; the 10 CFR 50.59 screenings and safety evaluations adequately addressed the effects of the proposed changes on plant operations, interactions with other systems and components due to the changes, any new failure modes introduced by the changes, and the effects of the changes on existing accident and transient analyses; and the 50.59 safety evaluations adequately addressed unreviewed safety question criteria.

However, during the 10 CFR 50.59 program review, the team noted that CR 1-98-05-081 was written for an inadequate 10 CFR 50.59 safety evaluation. The problem, as stated in the CR, read, “. . . SX heat exchanger minimum flows were changed without discussion in the 50.59 safety evaluation.” In addition, the CR contained the statement, “This is the third instance during the SX system design and functional verification (SDFV) of design values being changed without discussion in the applicable 50.59.” Based on this CR, it was evident that 10 CFR 50.59 screening and evaluation problems have not been completely eliminated.

c. Conclusions

Based on the inspection results, the team concluded that the licensee had an acceptable 10 CFR 50.59 program and that qualified personnel prepared and reviewed the 10 CFR 50.59 screenings and safety evaluations. The team also concluded that the 10 CFR 50.59 screenings and safety evaluations reviewed were adequate with the exception of some minor errors. Although no specific issues were identified by the inspectors, the number of licensee identified CRs concerning safety screenings and evaluations revealed that problems still exist.

E1.3 Assessment of the Shutdown Service Water System

a. Inspection Scope (IP37550)

The team reviewed the SX system to assess the system's ability to perform its intended safety function as described in the design and licensing basis (Restart Action Plan Case Specific Checklist Matrix Item VI.1). The inspectors reviewed the licensee's SDFV SX system assessment. The assessment was discussed with cognizant individuals who participated in the assessment as well as other individuals who were knowledgeable of the SX system. Selected SX related CRs and other system related documents were reviewed for appropriate actions.

b. Observations and Findings

The SDFV review of the SX system was conducted in late 1997 and early 1998, primarily using independent outside contractors. The SDFV assessment resulted in the identification of a number of system related problems, several of which were significant.



The final report, issued on May 13, 1998, listed 50 separate SX related problems which were documented in CRs.

The team noted that many of the identified system problems had been corrected and actions for the other problems were underway or were scheduled to be completed in the near future. The problems had been evaluated and actions that affected important safety-related equipment were scheduled for completion prior to plant startup. The inspectors reviewed selected CRs to verify that the planned or completed actions were adequate. In addition, the respective design engineers were interviewed and based on these interviews, the inspectors determined that the engineers were knowledgeable of the hardware changes and the effect of the design changes on the SX system. The recent SX system hardware changes reviewed by the team consisted of minor modifications since no recent major SX system modifications had been completed.

c. Conclusions

Based on the team's review, the inspectors concluded that the SX system design and configuration controls were adequate. The SDFV assessment of the SX system was very comprehensive and thorough. The team concluded that actions taken as the result of the SDFV assessment would correct many operational problems and concerns with the SX system.

E1.4 Adequacy and Control of Calculations

a. Inspection Scope (IP37550)

The team reviewed the adequacy and control of calculations to assess how effectively the licensee had implemented calculation and control processes (Restart Action Plan Case Specific Checklist Matrix Item VI.2).

b. Observations and Findings

During the inspectors' initial meeting with the licensee, the licensee referenced the results of the calculation reviews associated with the SDFV and system surveillance test review (SSTR) programs to support their conclusion that plant calculations were technically adequate. The team questioned this conclusion since the SDFV and SSTR reviews were performed to provide a functional design and licensing basis requirements review and were not performed as part of a detailed calculation design review. However, the licensee had concluded based upon the quantity of the calculations reviewed in connection with these programs that plant calculations were technically adequate. The team stated that the only licensee program that performed a detailed calculation design review was the Detailed Design Review (DDR) Program, which had reviewed 40 calculations to date.

During followup discussions with the licensee, the licensee presented a revised approach which involved a more systematic method to support the technical adequacy of plant calculations. Although a revised methodology was adopted by the licensee, it had not yet been fully implemented. Consequently, the team could not evaluate its adequacy. Numerous reviews remained to be conducted by the licensee.

c. Conclusions

The team concluded that the licensee's revised methodology for reviewing calculations in order to determine the technical adequacy of the CPS calculation program was satisfactory. However, insufficient activities were completed by the licensee at the conclusion of this inspection to support an adequate review by the NRC. As a result, the inspection of this issue could not be completed during the E&TS inspection.

E1.5 Adequacy and Control of the Setpoint Program

a. Inspection Scope (IP37550)

The team reviewed the adequacy and control of the setpoint program to assess how effectively the licensee had implemented setpoint control processes (Restart Action Plan Case Specific Checklist Matrix Item VI.3).

b. Observations and Findings

The team's review of the CPS Setpoint Program was limited since the licensee's Setpoint Program Action Plan was not approved until September 30, 1998. The inspectors reviewed the approved action plan, which outlined the licensee's strategy to address the setpoint program concerns using a two phase approach.

The licensee stated that Phase 1 involved establishing administrative and technical guidance to ensure adequate configuration management of plant instrument setpoints and to provide confidence that the plant's safety-related and accident mitigation instrumentation would conservatively satisfy its intended functions. Phase 1 activities were scheduled to be completed prior to restart.

Phase 2 consisted of implementing a long term calculation upgrade plan, which was intended to correct discrepancies identified in the licensee's design basis instrumentation setpoint program. The licensee also expected this upgrade plan to include the development of documentation to ensure that continued operations and maintenance activities are conducted within those design bases. Phase 2 activities would be implemented following restart.

The inspectors did not identify any problems with the licensee's planned approach; however, initial discussions with the licensee revealed that this plan was in its infancy and a substantial amount of work remained before it was ready to be reviewed further by the NRC.

c. Conclusions

The team concluded that the licensee's Setpoint Program Action Plan methodology was sound. However, insufficient activities were completed by the licensee at the conclusion of this inspection to allow for an adequate review by the NRC. As a result, the inspection of this issue could not be completed during the E&TS inspection.

## **E3 Engineering Procedures and Documentation**

### **E3.1 Condition Reports**

#### **a. Inspection Scope (IP37550; IP37700)**

The inspectors performed selected reviews of CRs to evaluate the quality of the licensee's apparent cause and extent of condition evaluations as well as the adequacy and timeliness of associated corrective actions.

#### **b. Observations and Findings**

For most selected CRs, the inspectors determined that the apparent cause and extent of condition evaluations were adequate, and the associated corrective actions were timely and of sufficient scope. Some problems were identified with instrument drift trending and the resolution of a previously identified violation (50-461/95003-02) concerning inadequate evaluation of heat exchanger test results, as discussed in Sections E3.3 and E8.2, respectively.

The threshold for writing CRs was considered adequate and the problems identified in the CRs reviewed were well documented. The actions described in the CRs to resolve the problems appeared to be adequate and no problems or concerns were noted with the selected CRs reviewed. In addition, based on their system reviews, the inspectors did not identify any problems that had not been previously identified through the licensee's CR program.

#### **c. Conclusions**

In most instances, the corrective action process for the CRs selected for review was adequately implemented and resulted in acceptable corrective actions.

### **E3.2 Post/Stamp Affixed Program**

#### **a. Inspection Scope (IP37550; IP37700)**

The team assessed the use of the post/stamp affixed change program and the potential impact of not using post/stamp affixed drawings on the CPS hardware changes during the SDFV and SSTR review process.

#### **b. Observations and Findings**

The licensee implemented a drawing change program called the post/stamp affixed program to identify minor equipment variations (e.g., arc strikes, grind marks, etc. on installed equipment) that were not incorporated into revised plant drawings. The minor variations were to be identified/recorded against the drawing number in the licensee's Document Status System. The intent of the program was to exclude minor variations

from controlled drawings such that the minor variations would not require consideration during tag-outs or other work activities. However, the licensee determined that the program was not implemented properly in that the potential existed for the licensee to apply the program to equipment variations that were not just minor. As a result, drawing revisions might not have been initiated for more significant equipment changes. The licensee's corrective action plan to resolve the identified concern was described in CR 1-98-06-0186, "Lack of Understanding Post/Stamp Affixed Change Documents," Revision 0, and the plan was approved on September 29, 1998.

During the inspectors' review of this issue and discussions with the licensee, the inspectors determined that the licensee's corrective action plan would preclude treating future equipment changes that required drawing revisions within the post/stamp affixed program. The team did not identify any new problems associated with the post/stamp affixed drawing program that had not been previously identified by the licensee.

c. Conclusions

The team concluded that not using post/stamp affixed drawings during specific engineering review processes had no major impact on the final engineering work products.

E3.3 Surveillance Procedures

a. Inspection Scope (IP37550; IP37700)

The inspectors reviewed several recently completed surveillance procedures for adequacy of content and implementation related to the main steam and instrument air (IA) systems containing ADS instrumentation. Procedures reviewed included, but were not limited to, CPS 9430.30 - "NSPS Untested Island/Calibration 1-999 Second Time Delay," dated August 22, 1998; CPS 9433.03 - "ECCS Reactor Water Level B21-N091A Channel Calibration," dated August 31, 1998, and; CPS 9433.10 - "ECCS Drywell Pressure B21-N094A(E) Channel Calibration," dated June 26, 1997.

b. Observations and Findings

The surveillance procedures reviewed were of adequate quality and were implemented properly. However, some indications of instrument drift were noted during the team's review of the completed surveillance data sheets. The as-found data for some safety-related instruments, specifically Drywell Pressure Switch B21-N094A and Reactor Water Level Channels B21-N691E, B21-N692A, and B21-695A were outside the specified acceptance criteria.

Although the as-left calibrations of these instruments were within acceptable tolerances, the inspectors were concerned with the observed instrument drifts and inquired whether the licensee was performing instrument drift trending. This issue was discussed with the plant control and instrumentation (C&I) engineers and the maintenance supervisor. The licensee informed the team that the plant did not have an instrument setpoint control program or an instrument performance trending program. The licensee stated that the

Reliability Group had trended some instrumentation until 1995; however, the trending was discontinued when the group was disbanded. Lack of an adequate instrument setpoint control program and lack of trending of safety-related instrument drift was considered a weakness.

The licensee also stated that supporting calculations for several important instrument setpoints were either inadequate or missing. The licensee's proposed corrective actions included issuing implementing procedures for a setpoint control program and the preparation/revision of necessary setpoint calculations. Subsequent to the team's discussion concerning these issues, the licensee issued an instrument setpoint program action plan on September 30, 1998, as discussed in Section E1.5.

c. Conclusions

The team concluded that the lack of a setpoint control program and a lack of trending of safety-related and maintenance rule-related instrument drift was a weakness. The team also concluded that lack of supporting calculations for important instrument setpoints was a weakness.

E3.4 System Health Report

a. Inspection Scope (IP37550)

The team reviewed the licensee's "System Health Report" (SHR) and discussed the report's rating criteria/system status with cognizant licensee personnel to determine if the information contained in the SHR reflected an accurate status of the monitored systems.

b. Observations and Findings

The SHR was generated in response to the licensee's "Plan for Excellence" to provide a comprehensive representation of the material condition of the monitored systems. The SHR used a color coding scheme to communicate system status and identify problem areas. The color coding scheme was based on a rating criteria for six categories: performance; operator work arounds and main control room deficiencies; configuration management; CRs; maintenance backlog; and physical condition. The color coding scheme was: Green - Excellent; Yellow - Acceptable; Orange - Degraded; and Red - Not Acceptable. The team evaluated the SHR status for the ADS, DC and SX systems.

The SHR rated the DC system excellent (green) for operator work arounds and main control room deficiencies and CRs; acceptable (yellow) for configuration management and physical condition; degraded (orange) for system performance; and not acceptable (red) for maintenance backlog. Contributors to the orange performance rating were potential degradation of molded case circuit breakers, lack of spare parts for battery chargers, and the lack of maintenance personnel training on battery charger requirements. The red performance rating was based on the large number of open MWRs greater than 18 months old (37% of total open).

The SHR rated the SX system excellent (green) for performance, operator work arounds and main control room deficiencies, and configuration management; degraded (orange) for maintenance backlogs and physical condition; and not acceptable (red) for CRs. Contributors to the orange performance rating were chronic valve leakage, excessive flow through the RHR heat exchanger bypass line, and a large number of old open MWRs. The red performance rating was based on the large number of old open CRs.

c. Conclusions

Based on their system reviews, the team concluded that the SHR provided an accurate accounting of system status with regards to the numbers of CRs, MWRs, etc. No major discrepancies were identified with the SHR for the systems reviewed. The ADS system status could not be reviewed since the system was not addressed in the SHR.

## **E.5 Engineering Staff Training and Qualifications**

### **E5.1 System Engineering**

a. Inspection Scope (IP37550)

The team interviewed selected system engineers and reviewed their qualifications and training.

b. Observations and Findings

The inspectors interviewed two system engineers responsible for the ADS system. The mechanical system engineer had responsibility for the ADS system for about two years and was also responsible for 10 other small systems. This system engineer had not received any formal system training on the systems assigned to him. However, the system engineer appeared qualified and experienced. The electrical system engineer assigned to the ADS system was a contractor. Although this engineer was experienced at other plants, he had not received any training for the systems assigned to him. The licensee stated that the lack of adequate training for the system engineers was identified during self-assessments and that corrective actions had been implemented.

c. Conclusions

The team concluded that the system engineers were generally qualified and experienced. However, the team identified a weakness in that detailed training was not provided to the system engineers for their assigned systems. On October 10, 1998, the team was notified in Letter Y-107159, dated October 5, 1998, that system engineers would receive mandatory senior reactor operator system training for their assigned system(s).

## **E8 Miscellaneous Engineering Issues (92701 and 92702)**

The inspectors reviewed actions taken by the licensee to address issues identified in LERs and in previous NRC inspection reports. The results of this followup effort are discussed in this section.

- E8.1 (Closed) Unresolved Item 50-461/93003-01A: NRC review of licensee actions to address incorrect grid voltages as documented in CR 1-92-04-031. The licensee developed calculations 19-AJ-70,-71,-72 to establish minimum pickup and dropout voltages at motor control centers. The results of the three calculations formed the basis for a proposed license amendment to change the degraded voltage values in Technical Specification (TS), Table 3.3.8.1-1. The NRC issued license amendment No. 110 documenting the acceptability of the current degraded values. This item is closed.
- E8.2 (Closed) Notice of Violation 50-461/95003-02: Failure to evaluate marginal diesel generator SX heat exchanger test results. Test results for four of the five diesel generator SX heat exchangers were in the "alert" range and engineering evaluations had not been performed. The engineering evaluations were required to verify that the heat exchangers would transfer the design basis heat loads to the ultimate heat sink. In addition, CPS procedures required that engineering evaluations be performed when heat exchanger test results were in the alert range. The licensee's response to the associated violation, dated July 13, 1995, stated that an engineering computer analysis was performed for the respective heat exchangers and that "... this analysis determined that the heat exchangers would have been able to adequately transfer design basis heat loads to the ultimate heat sink."

During performance of the 1997 review of the GL 89-13 program, licensee personnel questioned the adequacy of the response to this violation since the computer analysis was missing and could not be found. Condition Report 1-97-10-023, "Inadequate Responses to NRC NOV, EA Assessment 95E, and NAD Audit 038-94-16," dated October 1, 1997, was written to address this problem. Design engineering personnel stated that it was "... not cost effective to repeat the computer analysis simply to have it on file." Other statements in the CR referred to Calculation 0-65-017-PCC-02, "Evaluation of Diesel Generator Heat Exchanger Performance Data from 1990 to 1997," dated February 7, 1998, which addressed the test results and uncertainty of the results for all the emergency diesel generator (EDG) heat exchanger tests performed at CPS. The CR further stated that "... based on the calculation [0-65-017-PCC-02], the test results of one of the five tests is below the minimum acceptable design basis heat removal capability. If the test uncertainty band is considered, none of the five tests can be assured of exceeding design basis heat removal capability." This information was different from the information provided to the NRC in the violation response letter. Since the computer analysis documentation used to support the licensee's response to the violation was missing, the analysis could not be compared with the calculation to reconcile the difference.

The CR was closed on April 21, 1998, indicating that the licensee did not intend to further pursue this issue. However, NRC and licensee records did not indicate that the

violation had been closed by the NRC. Furthermore, the CR did not describe how the licensee had addressed the EDG heat exchanger problems revealed in the calculation. During inspector discussions with the licensee, the licensee agreed that CR 1-97-10-023 was closed improperly and that a supplemental response to the violation would be submitted. A supplemental response to the violation was received on October 26, 1998, and was considered acceptable.

Based upon the SDFV review conducted for the SX system, licensee actions had been identified to correct the noted problems with the EDG and other SX heat exchangers. The inspector's review of licensee records indicated that two of the EDG heat exchangers had been replaced and rework of the other three was in-progress. Licensee personnel stated that work on all five heat exchangers would be completed and the heat exchangers would be satisfactorily tested prior to plant restart. The inspector had no further concerns in this area and this item is closed.

- E8.3 (Closed) Notice of Violation 50-461/97003-03: Failure to perform adequate design reviews prior to installation of Auxiliary Power (AP) Modification AP-028. The design basis for modification AP-028 was not correctly translated into design drawings. Adequate design reviews were not performed to determine the suitability of a regulating transformer installed per modification LD-028 and an unauthorized modification to Division 2, Bus 1B1. Specifically, an uninterruptable power supply was added to the bus without any design control measures being implemented.

The licensee's CR dated January 7, 1997, and subsequent detailed root cause analysis identified weaknesses in a number of areas including the engineering staff's understanding of industry issues with microprocessors, the interface between the design change process and plant testing, and job skills.

The licensee's corrective action for this issue involved removing the regulating transformers from service and installing suitable transformers under Modifications AP-33, 34 and 35. Training was also provided to licensee engineering personnel on design considerations for microprocessor controlled equipment. This item is closed.

- E8.4 (Closed) Notice of Violation 50-461/97003-04: Failure to complete Clinton Procedure 1401.01F006, "CAT 'A' Instrument Failure Checklist," following completion of the TS surveillance test on the Off Gas Hydrogen Analyzer Channel IN66-N012A, where two as-found data points for recorder IN66-R605 were not within the specified limits. Technicians did not follow the procedure step that required the initiation of the instrument failure checklist.

The licensee initiated CR 1-97-05-261 to resolve the failure to properly follow procedure 1406.01F006 and to prompt the identification of any additional instances of the failure to follow the procedure. The inspectors reviewed documentation for attendance at a seminar presented to instrument technicians on complying with procedures. Based on a review of procedure evaluations initiated for instrument failures, the inspectors noted an increase in evaluations since the seminar was presented. This item is closed.



- E8.5 (Closed) Notice of Violation 50-461/97003-05: Failure to properly conduct a 10 CFR 50.59 safety evaluation for changes in operation of plant equipment and the installation of insulation on containment isolation system piping. The evaluation did not adequately justify that the changes did not involve a USQ.

The licensee's response to this violation was comprehensive. New safety evaluations were performed that justified the determination that the changes did not involve USQs. Based on their review of these evaluations, the inspectors did not identify any discrepancies. Both parts a. and b. of this violation are closed.

- E8.6 (Closed) Notice of Violation 50-461/97003-06: Failure to submit a report pursuant to 10 CFR 50.73(a)(2)(ii) within 30 days. The licensee initiated CR 1-96-10-360-0 upon identifying that 21 containment penetrations were susceptible to significant overpressure during a LOCA.

The licensee reported the potential overpressure condition pursuant to 10 CFR 50.73 on March 13, 1997. Personnel involved in reporting decisions have been trained on the reporting requirements involving ASME piping issues. This item is closed.

- E8.7 (Closed) LER 50-461/97-016-00: Failure to provide emergency lighting for safe shutdown equipment as required by the plant design basis. Emergency lighting was not provided as required by 10 CFR Part 50, Appendix R, to reposition valve 1E12-F024B during a hot short of the cables associated with valve 1E12-F006B. The licensee's corrective actions for the hot short concern included de-energizing valve 1E12-F006B to ensure that it would not open during the hot short condition as discussed in Section E1.1. Additional corrective actions resulted in the emergency light no longer being required. The inspector determined that the corrective actions were acceptable. This LER is closed.

- E8.8 (Closed) LER 461/97-026-00,-01: Inadequate procedure for inspection of shutdown service water pumps for excess silt resulted in shutdown service water pump inoperability. This LER was written when the excessive accumulation of silt in the SX pump intake area caused the SX pumps to be declared inoperable. The licensee's actions to address this issue included determination of maximum allowed silt accumulation levels in the SX pump intake bay, removal of excessive silt from the intake area, and establishment of a periodic silt level inspection requirement for the area as discussed in Section E1.1. Based on these actions, LERs 97-026-00 and 97-026-01 are closed.

- E8.9 (Closed) LER 50-461/97-027-00: Misinterpretation of 10 CFR 50.59 resulted in installation of a modification to the RHR system that placed the plant in a condition that was outside of the plant's design basis. This LER was issued for a 10 CFR 50.59 evaluation that failed to evaluate the addition of relay interlocks to the RHR system during the modification process when there was a potential for an increase in the probability of equipment failure. These relays were removed during modification RH-48 as discussed in Section E1.1, so they no longer affect the probability of failure of this system.

The licensee's corrective actions included a change in the safety evaluation procedure to provide additional guidance pertaining to an increase in the probability of an equipment malfunction. The inspectors verified that the corrective actions were properly implemented. This LER is closed.

- E8.10 (Closed) LER 50-461/97-035-01: Division 1 and 2 battery chargers incapable of supplying full rated voltage and current flow at degraded voltage trip setpoint in accordance with the plant's TS and design basis.

During investigation of voltage margins and a cable impedance deficiency, the licensee found that the Divisions 1 and 2 safety-related battery chargers had not been included in the degraded voltage calculations. The licensee determined that this condition had existed since initial startup.

This event was caused by a failure to include the battery charger's minimum voltage requirement in the acceptance criteria for the degraded voltage transient calculation. A design change was issued to adjust the tap settings on the Division 1 and 2 battery charger transformers to assure that the minimum voltage requirement was met. The inspectors did not identify any discrepancies based on their review of appropriate calculations, design changes and corrective action work documents.

Criterion III of 10 CFR Part 50 requires that measures be established to assure that the design control measures provide for verifying or checking the adequacy of design. This non-repetitive, licensee-identified and corrected violation is an NCV, consistent with Section VII.B.1 of the NRC Enforcement Policy (NCV 50-461/98019-03(DRS)). This LER is closed.

- E8.11 (Closed) Inspection Followup Item 461/97999-20: Possible inadequate implementation of GL 89-13 requirements for the shutdown service water system. The inspectors reviewed completed licensee assessments and evaluations of the SX system. This included the SDFV review of the SX system. The SDFV review was based on the requirements of GL 89-13 and the review appeared to be thorough and comprehensive. A number of problems were identified. Actions to resolve many of these problems had been completed and others were in-progress. The inspectors had no further concerns in this area. This item is closed.

- E8.12 (Closed) LER 50-461/98-001-00: Failure of Division 2 safety-related battery charger due to deficient supplier soldered connections. A low voltage alarm on the Division 2 DC bus was received in the control room. Other indications included zero ampere output from the battery charger followed by the DC bus voltage stabilizing at about 128 Volts which was the expected voltage for a loss of the battery charger. The charger appeared to stop and start itself electronically, i.e., the DC output voltage and current decreased to zero and then returned to normal.

Based on followup troubleshooting, the licensee attributed the cause of the failure to deficient supplier workmanship in soldered wire connections at transformer T1A. The licensee confirmed this theory with a test on the plant's training battery charger. In addition, a broken wire was discovered at transformer T1A.

The licensee's corrective action for this issue included resoldering the loose connections on the silicon controlled rectifier (SCR) firing cards, repairing the broken wire at transformer T1A, and resoldering the wire connection at fuse F-7 in the Division 2 battery charger. Also, the other safety-related battery chargers from the same manufacturer had been inspected and necessary repairs effected. Based on a review of completed MWRs, documenting the inspection and repair activities, this LER is closed.

- E8.13 (Closed) LER 50-461/98-004-00,-01: Division 2 nuclear systems protection system (NSPS) inverter not in accordance with the plant's design basis due to various deficiencies. During troubleshooting of spurious transfers of the Division 2 NSPS inverter to its 120 Volt alternate ac source, technicians discovered various deficiencies in the SCR, power diodes, a resistor, and improperly soldered connections.

The licensee, through a root cause investigation, determined that the cause was ineffective and inadequate preventive maintenance activities. Contributing factors were incomplete and incorrect calibration procedures and inadequate training of maintenance personnel on specific techniques regarding maintenance of various internal components.

The licensee replaced all defective components discovered during troubleshooting. Connections were inspected, tightened, and tested. Calibration procedures were enhanced and equipment recalibrated to the revised procedures.

The inverter was tested under the supervision of a vendor representative and returned to service. No spurious transfers have been experienced since the inverter was returned to service. The licensee inspected the Division 1, 3, and 4 inverters and the A and B NSPS solenoid inverters.

Training was provided to maintenance personnel on procedures and techniques for soldering, proper installation of power semi-conductors, and the proper application of heat transfer compound. Licensee Event Reports 98-004-00 and 98-004-01 are closed.

## **M.2 Material Condition of Facilities and Equipment**

### **M2.1 Plant Walkdowns**

#### **a. Inspection Scope (IP37700)**

The inspectors walked down the IA system, as it relates to the ADS, AP and DC systems, and the SX system to assess the material condition.

#### **b. Observations and Findings**

The inspectors walked down the IA system and some components of the ADS system with the system engineer. No problems were identified. Based on a visual inspection of plant locations where the degraded voltage modification activities were in-progress, the inspectors determined that the components and systems were being installed according to approved design drawings. The installation of the degraded voltage modification was not yet complete so PMT had not been accomplished. The team concluded that the degraded voltage modification was being installed according to the approved design. Appropriate design, engineering, and management reviews were performed.

c. Conclusions

The material condition of the walked down systems appeared to be good. The system engineers appeared to be knowledgeable of the systems.

## **V. Management Meetings**

### **XI Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on October 9, 1998. The licensee acknowledged the findings presented. The inspectors questioned the licensee as to the potential for proprietary information being included or retained in the inspection report as discussed at the exit. No proprietary information was identified.

## **PARTIAL LIST OF PERSONS CONTACTED**

K. Baker, Director - Support Engineering  
J. Barron, Director - Plant Engineering  
R. Bhat, Supervisor - Fire Protection Engineering  
D. Busham, Supervisor - Quality  
W. Carsky, Director - Design Engineering  
V. Cwietniewicz, Manager - Maintenance  
L. Demick, Chairman - Senior Engineering Review Group  
R. Ebright, Project Manager - System Design and Functional Verification  
K. Graf, Project Manager - Nuclear Station Engineering Department (NSED)  
J. Gruber, Director - Corrective Action  
J. Hanson, Director - Nuclear Training  
A. Haumann, Supervisor - Design Engineering  
B. Haynes, Project Manager - Setpoint Program  
W. Helenthal, Supervisor - Maintenance Planning (C&I)  
G. Hunger, Manager - Clinton Power Station  
S. Lakebrink, Supervisor - Design Engineering  
W. MacFarland IV - Chief Nuclear Officer  
R. Maher, Supervisor - Plant Engineering  
W. Manganaro, Project Manager - Project Engineering  
P. Marcum, Supervisor - C&I Design  
M. Norris, Supervisor - Engineering Assurance  
E. Patel, Director - Project Engineering  
R. Phares, Manager - Nuclear Safety and Performance Improvement  
W. Romberg, Manager - NSED  
T. Roe, Manager - Maintenance Direct Support  
E. Schweitzer, Supervisor - NSSS Systems  
J. Sipek, Director - Licensing  
M. Stickney, Supervisor-Regional - Licensing  
M. Wyatt, Manager - Recovery

## **INSPECTION PROCEDURES USED**

IP 37001	10 CFR 50.59 Safety Evaluation Program
IP 37550	Engineering
IP 37700	Design Changes and Modifications
IP 92701	Followup
IP 92702	Followup on Corrective Actions for Violations and Deviations

## ITEMS OPENED, CLOSED OR DISCUSSED

### **Opened**

50-461/98019-01	VIO	Enforcement Discretion per VII.B.2: Loss of Suppression Pool Cooling
50-461/98019-02	NCV	Failure to Take Adequate and Timely Action to Correct the SX Pump Intake Silting Problem
50-461/98019-03	NCV	Division 1 and 2 Battery Chargers Incapable of Supplying Full Rated Voltage and Current Flow at Degraded Voltage Trip Setpoint

### **Closed**

50-461/93003-01A	URI	NRC Review of Licensee Actions to Address Incorrect Grid Voltages as Documented in CR 1-92-04-031
50-461/95003-02	VIO	Failure to Evaluate Marginal Diesel Generator SX Heat Exchanger Test Results
50-461/97003-03	VIO	Failure to perform adequate design reviews prior to installation of Auxiliary Power (AP) Modification AP-028
50-461/97003-04	VIO	Failure to Complete Clinton Procedure 1401.01F006, "CAT 'A' Instrument Failure Checklist," Following Completion of Technical Specification Surveillance Test
50-461/97003-05	VIO	Failure to Properly Conduct a 10 CFR 50.59 Safety Evaluation for Changes in Operation of Plant Equipment
50-461/97003-06	VIO	Failure to Submit a Report Pursuant to 10 CFR 50.73(a)(2)(ii) Within 30 days
50-461/97-016-00	LER	Failure to Provide Emergency Lighting for Safe Shutdown Equipment as Required by the Plant Design Basis
50-461/97-026-00,-01	LER	Inadequate Procedure for Inspection of Shutdown Service Water Pumps for Excess Silt Results in Shutdown Service Water Pump Inoperability
50-461/97-027-00	LER	Misinterpretation of 10 CFR 50.59 Results in Installation of Modification of the Residual Heat Removal (RHR) That Is Outside of the Plant's Design Basis
50-461/97-035-00,-01	LER	Division 1 and 2 Battery Chargers Incapable of Supplying Full Rated Voltage and Current Flow at the Degraded

Voltage Trip Setpoint in Accordance with the Plant's  
Technical Specifications and Design Basis

50-461/97999-20	IFI	Possible Inadequate Implementation of GL 89-13 Requirements for the Shutdown Service Water System
50-461/98-001-00	LER	Failure of Division 2 Safety-Related Battery Charger Due to Deficient Supplier Soldered Connections
50-461/98-004-00,-01	LER	Division 2 Nuclear Systems Protection System Inverter Not in Accordance with the Plant's Design Basis Due to Various Deficiencies
50-461/98019-01	VIO	Enforcement Discretion per VII.B.2: Loss of Suppression Pool Cooling
50-461/98019-02	NCV	Failure to Take Adequate and Timely Action to Correct the SX Pump Intake Silting Problem
50-461/98019-03	NCV	Division 1 and 2 Battery Chargers Incapable of Supplying Full Rated Voltage and Current Flow at Degraded Voltage Trip Setpoint

**Discussed**

No items identified during previous inspections were reviewed and discussed without being closed during this inspection.



## LIST OF ACRONYMS USED

AP	Auxiliary Power
ADS	Automatic Depressurization System
C&I	Control and Instrumentation
CFR	Code of Federal Regulations
CPS	Clinton Power Station
CR	Condition Report
DC	Direct Current
DDR	Detailed Design Review
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
E&TS	Engineering and Technical Support
ECCS	Emergency Core Cooling System
ECN	Engineering Change Notice
EDG	Emergency Diesel Generator
EQ	Environmental Qualification
ERAT	Emergency Reserve Auxiliary Transformer
GL	Generic Letter
HPCS	High Pressure Core Spray
IA	Instrument Air
IP	Inspection Procedure
ISA	Integrated Safety Assessment
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MVAR	Mega-Volt Ampere Reactive
MWR	Maintenance Work Request
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
NSPS	Nuclear Systems Protection System
NSED	Nuclear Station Engineering Department
PM	Preventative Maintenance
PMT	Post-Modification Testing
QA	Quality Assurance
RAT	Reserve Auxiliary Transformer
RHR	Residual Heat Removal
SCR	Silicon Controlled Rectifier
SDFV	System Design and Functional Verification
SHR	System Health Report
SPC	Suppression Pool Cooling
SSTR	System Surveillance Test Review
SVC	Static VAR Compensators
SX	Shutdown Service Water System
TS	Technical Specifications
USAR	Updated Safety Analysis Report
USQ	Unreviewed Safety Question
VIO	Violation

## PARTIAL LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply that NRC inspectors reviewed the documents in their entirety, but rather that portions or selected portions of the documents were evaluated as part of the overall inspection effort. NRC acceptance of the documents or any portion thereof is not implied.

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
Calculation 01IA10	Calculation	1
Calculation 01RH16	Calculation	-----
Calculation 01RH23	Calculation	0
Calculation 01RH26	Calculation	0
Calculation 01RH42	Calculation	-----
Calculation 01SX32	SX Cooling Water Requirement for OPR13A	-----
Calculation 0-65-017-PCC-02	Evaluation of Diesel Generator Heat Exchanger Performance Data from 1990 to 1997	02/07/98
Calculation 19-AK-13	Calculation	0
Calculation 19-AJ-70	Calculation	-----
Calculation 19-AJ-71	Calculation	-----
Calculation 19-AJ-72	Calculation	-----
Calculation DC-ME-09-CP	Calculation	11
Calculation EMD-021930	Calculation	2-L
Calculation EQ-A-9	Radiation Qualification Dose for Equipment in Auxiliary Building Emergency Core Cooling System (ECCS) Cubicles	0
Calculation EQ-A-12	Calculation	1
Calculation IP-M-0227	Calculation	4
Calculation IP-S-0132	Acceptance Criteria for Allowable Sediment Depth (Siltation) in the CW Screenhouse	-----
Calculation ISX-22A	Calculation	-----
CR 1-95-06-036	Incomplete EDG Heat Exchanger Test Results, Evaluation/ Review	-----
CR 1-97-06-181	Inadequate 8 Hour Battery Powered Emergency Lighting	06/17/97
CR 1-97-09-058	ISA - OBS #1997-0692 A Large Number of PM Tasks are Past Due or Late, Many Without Approved Deferral Requests	09/05/97
CR 1-97-09-331	Division 2 Diesel Generator Heat Exchanger Overdue PMs	-----
CR 1-97-09-344	ISA: Inspection of the SX/FP Pump Intake Bays for Silt and Clams	
CR 1-97-10-023	Inadequate Responses to NRC NOV, EA Assessment 95E, and NAD Audit 038-94-16	10/01/97
CR 1-97-10-054	Indeterminate Condition Because of Silt in the SX/Unit 1 FP Bay Area of the Screen House	10/03/97

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
CR 1-97-10-131	Safety Evaluation for Modification RHF011 Did Not Fully Evaluate Loss of Suppression Pool Cooling	10/10/97
CR 1-97-11-021	Weakness in GL 89-13 (Safety Related Heat Exchangers) Program	-----
CR 1-97-11-368	GL 89-13 Heat Exchanger Test Program Deficiency	11/19/97
CR 1-97-12-333	Suppression Pool Cooling Disabled	12/31/97
CR 1-98-01-165	Potential Ice Buildup at Screen House Intake Due to Cold Ambient Temperature	-----
CR 1-98-02-457	Non-Existant Remote Shutdown Function Periodically Tested (SDFV)	-----
CR 1-98-03-022	Failure to Periodically Test Strainer Backwash Valves 1SX013D/E/F (SDFV)	03/06/98
CR 1-98-03-023	SX Auto Backwash on High Dp Not Periodically Verified (SDFV)	03/06/98
CR 1-98-03-571	Inadequate Design Review	03/30/98
CR 1-98-05-081	SX Heat Exchanger Minimum Flows Were Changed Without Discussion in the 50.59 Safety Evaluation	05/13/98
CR 1-98-05-145	Inadequate Engineering Evaluations May Lead to Ineffective Corrective Actions	05/15/98
CR 1-98-05-308	No Controlled Calc to Determine RCS Vol. to Calculate Reg, Boron Wt. to Achieve Correct Concentration	05/29/98
CR 1-98-05-309	No Pressure Drop Calculation Calc for SLC System	06/01/98
CR 1-98-06-036	Calculation Identification and Approval	06/03/98
CR 1-98-06-132	RHR Bypass in Excess of 8000 GPM	06/16/98
CR 1-98-06-186	Lack of Understanding Post/Stamp Affixed Change Documents	06/15/98
CR 1-98-06-191	Discrepancy Between Setpoint for 1RIX-PRO34 and Calculation PR-27	06/16/98
CR 1-98-06-302	Inadequate Control of Design Basis Calculations	06/25/98
CR 1-98-07-023	Reactor Hi Pressure Scram Setpoint Outside Design Spec Data Sheet Value	07/06/98
CR 1-98-07-288	Possible Tagging Program Impacts From Lack of Understanding of Post/Stamp Affixed Change Documents	07/23/98
CR 1-98-07-303	Uncontrolled Calcs Used to Change Plant Instrument Setpoints for ECCS Instrumentation	07/24/98
CR 1-98-07-308	Adverse Trend Identified - Setpoint Calculations Not Performed or Controlled in a Quality Fashion	07/24/98
CR 1-98-08-150	Procedure Inadequacy to Address Deficiencies in Instruments Used to Satisfy Surveillance Requirements	08/14/98
CR 1-98-08-206	Missed Design Impact May Affect RHR-B Suppression Pool Cooling	08/18/98
CR 1-98-09-201	Division 1 SX Flow Balance Low Flows to Safety Related Components Fed by SX	-----

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
CR 1-98-10-084	Failure to Identify CR 1-98-08-206 as an Event Reportable under 10 CFR 50.73	10/06/98
CR 3-97-07-198	NSED Engineering Support Training Program Description (TPD) Non-Compliance	07/18/97
ECN 27675	Replacement of Target Rock Valves 1IA-044A and 1IA-044B	02/09/94
ECN 28365	Increase of Stroke Time of Valve 1IA-013B	09/16/94
ECN 30019	Utilize Spare Contacts on Remote Shutdown Panel Switch 1C61-HS510 to Isolate the Electrical Return Path for the Green and Red Lights	-----
ECN 30211	Install Annunciator Bypass Switch	-----
ECN 30225	Revision of ADS Instrument Air Header Low Pressure Alarm Setpoint	07/11/97
ECN 30430	Revise Design for High Voltage Shutdown Card	-----
ECN 30445	Revise Setpoint for High Voltage Shutdown 1DC08E	-----
ECN 30492	Design Changes to Control Circuits of Motor Operated Valves (MOVs) Modification RH-048, Residual Heat Removal (RHR) Pump A & B Suction Valve Interlocks	-----
ECN 30660	Transformer Tap Change on 1DC06E & 1DC07E	-----
ECN 30669	Transformer Tap Change on 1DC07E	-----
ECN 30708	Motor Replacement for the 1SX014B Valve Operator	-----
ECN 30867	Eliminate Pressure Locking on 1E12-F028A	-----
ECN 30903	Installation of a Restrictive Orifice in the SX/RHR Heat Exchanger Bypass Line to Reduce Bypass Flow	-----
ECN 30928	Installation Cleanout Connections on SX and WS Piping to Support Required Flow Balancing	-----
ECN 30992	Division 4 Battery Changer Tap Change	-----
EQ-CLO23, Tab D	Environmental Qualification of 480V Indoor Unit Substation	12
EQ-CL-041 (Vol 1 of 4), Tab 1	ITT Barton Qualification Test Report No. R3-580A-9 for ITT Barton 580A Series Differential Pressure Switches	-----
Generic Letter 89-13	Service Water System Problems Affecting Safety-Related Equipment	07/18/89
LER 97-016-00	Failure to Provide Emergency Lighting for Safe Shutdown Equipment as Required by the Plant Design Basis	07/16/97
LER 97-025-00	Design Deficiency Results in plant Being Outside Design Basis for a Fire in the Main Control Room Potentially Damaging Valves Required for Safe Shutdown of the Plant	10/28/97
LER 97-026-00,-01	Inadequate Procedure for Inspection of Shutdown Service Water Pumps for Excess Silt Results in Shutdown Service Water Pump Inoperability	11/13/97 03/03/98
LER 97-027-00	Misinterpretation of 10 CFR 50.59 Results in Installation of Modification of the Residual Heat Removal (RHR) That Is Outside of the Plant's Design Basis	12/04/97

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
LER 97-035-00,-01	Division 1 and 2 Battery Chargers Incapable of Supplying Full Rated Voltage and Current Flow at the Degraded Voltage Trip Setpoint in Accordance with the Plant's Technical Specifications and Design Basis	01/16/98 03/19/98
LER 98-001-00	Failure of Division 2 Safety-related Battery Charger Due to Deficient Supplier Soldered Connections	02/17/98
LER 98-004-00,-01	Division 2 Nuclear Systems Protection System Inverter Not in Accordance with the Plant's Design Basis Due to Various Deficiencies	02/26/98 05/28/98
LER 98-016-00	Failure to Test Valves 1SX013D/E/F in Accordance with the In-service Testing Program Due to Personnel Error	06/11/98
Letter (GE) from L.H. Larson to J.H. Greene	CPS, Unit 1 Setpoint Methodology Program Attachments contain calculations for LPCS, LPCI, ADS Bypass Timer and Initiation Timer, High Drywell Pressure, RV Water Level 3, Level 1 Water Level <b>Proprietary Information</b>	01/23/97
Letter (GE) from L.H. Larson to J.H. Greene (Attachment)	Contains applicable portions of 22A5462 <b>Proprietary Information</b>	11
Letter (GE) from L.H. Larson to J.H. Greene (Attachment)	Contains applicable portions of 22A3139AN <b>Proprietary Information</b>	17
Letter (GE) from L.H. Larson to J.H. Greene (Attachment)	Contains applicable portions of 22A4622 <b>Proprietary Information</b>	7
Letter (GE) from L.H. Larson to J.H. Greene (Attachment)	Contains applicable portions of 22A4622AV <b>Proprietary Information</b>	12
Letter (GE) from L.H. Larson to J.H. Greene (Attachment)	Contains applicable portions of NEDC 31336 CLASS III GE Instrument Setpoint Methodology <b>Proprietary Information</b>	October 1986
Letter U-602554	Proposed Amendment of Facility Operating License No. NPF-62 (LS-94-013)	02/22/96
Letter U-602613	Additional Info for Proposed Amendment of Facility Operating License No. NPF-62(LS-94-013)	07/24/96
Letter U-602836	USAR Submittal, Rev 7	10/20/97
Letter Y-107159	Mandatory SRO System Training	10/05/98
Letter Y-108025	Engineering Support Review of NSED PII Surveys <b>Proprietary Information</b>	04/23/98
Letter Y-108084	SDFV Project 1998 -- Final Report	06/05/98
Letter Y-217517	ADS SSFA	03/29/96
M01-1600 Sheet 9	Drawing	A
M05-1040 Sheet 7	Drawing	AC
M05-1052 Sheet 1	Shutdown Service Water (SX) P&ID Drawing	AL
M05-1052 Sheet 2	Shutdown Service Water (SX) P&ID Drawing	AD
M05-1052 Sheet 3	Shutdown Service Water (SX) P&ID Drawing	AE
M05-1052 Sheet 4	Shutdown Service Water (SX) P&ID Drawing	P

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
M05-1052 Sheet 5	Shutdown Service Water (SX) P&ID Drawing	Z
Modification 1IA-021	Reposition Valve Limit and Torque Switches for Valves 1IA-012A and 1IA-013A	0
Modification AP-033	Replace Existing 480-208/120V/15KVA/3Phase Non-Regulating Distribution Transformer in Division 1 Motor	-----
Modification AP-034	Replace Existing 480-208/120V/15KVA/3Phase Non-Regulating Distribution Transformer in Division 2 Motor	-----
Modification AP-035	Replace Existing 480-208/120V/15KVA/3Phase Non-Regulating Distribution Transformer in Division 3 Motor	-----
Modification AP-036	Install Foundations SVC's for Both RAT & ERAT 4kV Bus Source	-----
Modification AP-037	Install SVC Unit, Connected to 4kV Bus Near RAT Transformer	-----
Modification RH-047	Modification of Various MOV Circuits for Hot Shorts	-----
Modification RH-048	Residual Heat Removal (RHR) Pump A & B Suction Valve Interlocks	-----
Modification RHF-011	Interlock Installation	-----
MWR D73800	MWR D73800 (for ECN 30211)	-----
MWR D82191	Install Division 1 Portion of RH-048 Modification	-----
NSED Instruction DE-12	Instruction for Marking (Redline/Greenline) Control Room Drawings to Reflect Plant Configuration Changes	12
NSED Instruction ER-01	Engineering Product Review (EPR) Project Plan	0
NSED Instruction ER-2	Technical Specification Required System Surveillance Test Review (SSTR) Plan	0
NSED Procedure A.04	Nuclear Station Engineering Department Organization	7
NSED Procedure D.43	Incorporating Design Change Documents into Engineering Documents	8
NSED Procedure D.46	Request for Miscellaneous Drafting Services	9
NSED Procedure E.1	Calculations	8
NSED Procedure W.01	Engineering Work Request	3
NSED Self-Assessment NE-98-05	Control of Software-Hardware Change Process	05/29/98
NSED Self-Assessment NE-98-06	Partial Release of Modifications	06/29/98
NSED Self-Assessment NE-98-08	Review of Organizational Processes	07/09/98
NSED Self-Assessment NE-98-13	Engineering Support Training Program	05/22/98
NSED Self-Assessment NE-98-15	Temporary Modifications	06/30/98
NSED Self-Assessment NE-98-20	Control & Instrumentation Program	07/10/98
NSED Self-Assessment NE-98-21	Drawing Changes	07/10/98

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
NSED Self-Assessment NE-98-22	Maintenance Rule Implementation	03/18/98
NSED Self-Assessment NE-98-23	Adequacy of Closed Significant LERs, NOVs, CRs	07/10/98
NSED Self-Assessment NE-98-25	Adequacy of Open Significant CRs, LERs, NOVs	08/14/98

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
NSED Self-Assessment NE-98-26	Engineering Duty Director Role	07/10/98
NSED Self-Assessment NE-98-32	Assessment of CPS Nuclear Oversight Groups	08/28/98
NSED Standard CI-01.00	Instrument Setpoint Calculation Methodology	11/28/90
NSED Standard GS-04.00	System Design and Functional Validation (SDFV)	3
NTSD Training Guide LP85205	Residual Heat Removal System	3
NTSD Training Guide LP85239	Main Steam System (includes ADS)	3
NTSD Training Guide LP85263	Direct Current System	1
NTSD Training Guide LP85277	Shutdown Service Water System	1
NTSD Training Guide LP85571	Auxiliary Power System	1
NTSD Training Guide LP85830	High Pressure Core Spray System	2
Op Eval/Determination 1-98-09-201-OD	SX Division 1 Flows Lower than the Test Acceptance Criteria	-----
Op Eval/Determination 1-97-10-054-OD	The Silt Level in the Shutdown Service Water Fore Bay Area Was Indeterminate Resulting in a Degraded Condition	-----
PC-30932	Replacement Valve Operator Motors 1E12F064A	-----
Procedure 1003.01	CPS Hardware Change Program	22
Procedure 1005.06	Conduct of Safety Reviews	12
Procedure 1005.16	Self-Assessment	1
Procedure 1014.01	Safety Tagging	25
Procedure 1014.03	Temporary Modifications	18
Procedure 1014.06	Operability Determination	3
Procedure 1016.01	CPS Condition Reports	31
Procedure 1019.07	Leakage Reduction and Monitoring Program	4
Procedure 2400.01	Corbicula (Asiatic Clam) Control	5
Procedure 2602.01	Heat Exchanger Performance of Shutdown Service Water Coolers Covered by NRC Generic Letter 89-13	9
Procedure 2800.97	RH-048 Testing Div I Only	09/21/98
QAP-110.02 QC	Quality Assurance Procedure Inspection Planning	10
Restart Readiness Review Report	ASME Repair/Replacement Program	08/19/98
Restart Readiness Review Report	Control of Calculations	09/17/98
Restart Readiness Review Report	Data Trending & Analysis Program (Equipment Failure)	08/14/98
Restart Readiness Review Report	Environmental Qualification Program	08/13/98
Restart Readiness Review Report	Erosion/Corrosion Program	08/14/98
Restart Readiness Review Report	Fire Protection Program (Design)	08/17/98
Restart Readiness Review Report	Generic Letter 89-13 Program	08/14/98
Restart Readiness Review Report	Generic Letter 96-01 Program	08/13/98
Restart Readiness Review Report	Infrared Thermography Program	08/14/98



<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
Restart Readiness Review Report	Maintenance Rule Program	08/12/98
Restart Readiness Review Report	Material Condition Management Team Program	08/14/98
Restart Readiness Review Report	Non-Destructive Examination (NDE) Program	08/04/98
Restart Readiness Review Report	NSED Procedures, Standards & Instructions Program	08/18/98
Restart Readiness Review Report	Nuclear Fuel Management Program	08/19/98
Restart Readiness Review Report	Predictive Maintenance - Motor Monitoring Program	08/14/98
Restart Readiness Review Report	Predictive Maintenance - Oil Analysis Program	08/14/98
Restart Readiness Review Report	Predictive Maintenance - Vibration Monitoring Program	08/14/98
Restart Readiness Review Report	Primary Containment Leakage Rate Testing Program	08/17/98
Restart Readiness Review Report	Reactor Engineering Program	07/30/98
Restart Readiness Review Report	Seismic Qualification Program	08/05/98
Restart Readiness Review Report	Special Nuclear Materials Program	07/13/98
Restart Readiness Review Report	System Engineering Program	08/07/98
RMS Standard 4.01	Document Control	4
Safety Evaluation 1005.06F001	Temporary Modification 97-048, 97-046, and 97-045	-----
Safety Evaluation for Log 95-058	Elimination of DG Operability for ECCS Operability During a Plant Shutdown	-----
Safety Evaluation for Log 97-014	Temp Mod for DG Ventilation System (VD)	-----
Safety Evaluation for Log 97-143	Safety Evaluation for ECN 30211	-----
Safety Evaluation	Mod RH-048	08/15/98
Safety Evaluation Screening	Mod IA-021, 0	1
Vendor Manual K2882-0116	Valcor O&M Manual for Model V520-06-14	2
Vendor Manual M-009-002	Section on Barton Model 580-A Indicating Switches	-----
-----	Assessment of Maintenance Effectiveness	Cycle 6
-----	Completed PMMIAA003 (IIA25FB) CHANGE FILTER	01/19/98
-----	DDR Final Report (Volume 1)	09/98
-----	Engineering Evaluation for CR 1-98-09-201	10/01/98
-----	E26-1003-01 A-EI	U
-----	Maintenance Rule Expert Panel Meeting Minutes	09/10/98
-----	NRC SET Team Report	01/02/98
-----	NSED Monthly Performance Indicators	July 1998
-----	Operability Determination 1-98-09-201-OD	-----
-----	PM Evaluation Request (PMER) Sheet for EIN 1PSLSA055	04/06/98
-----	PMMIAA001 Completed	07/14/98
-----	PMMIAA001 Completed	10/29/96
-----	PMMIAA001 Completed	03/14/95
-----	PMMIAA002 Completed	08/18/98
-----	PMMIAA002 Completed	10/29/96

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
-----	PMMIAA002 Completed	03/14/95
-----	PMMIAA004 (IIA25FA) CHANGE FILTER Completed	01/19/98
-----	Relief Valve Check Point Data Sheet for 1IA128A	02/28/96
-----	Relief Valve Check Point Data Sheet for 1IA128B	02/28/96
-----	Review Plan: Detailed Design Review of Selected Modifications, Plant Changes and Calculations	08/05/98
-----	RH-048 ECN 30492 Detailed Impact Assessment for Simulator	-----
-----	RHR Reflood Analysis	7
-----	SDFV Project	06/05/98
-----	SDFV Final Report for RHR System	-----
-----	SDFV Final Report for SX System	-----
-----	Setpoint Program Action Plan	09/30/98
-----	SIRG Meeting Minutes	03/05/98
-----	SIRG Meeting Minutes	06/10/98
-----	SSC Scoping and Performance Criteria Printout for SP, MS, ADS, IA Systems from Maintenance Rule Database	09/14/98
-----	SX System Description	4
-----	SX System Functional Evaluation Matrix	0
-----	Summary Report - SIRG Assessment of SDFV Results	1
-----	System Health Report	2nd Qtr 1998
-----	Valve Safety Function Data Sheet for 1IA013B	
1005.07C001	Temporary Change Checklist (93-0477)	7
1005.07C001	TPD Preliminary Approval Checklist (TPD No. 96-0128)	10
1005.07C001	TPD Preliminary Approval Checklist (TPD No. 96-0129)	10
1005.07C001	TPD Preliminary Approval Checklist (TPD No. 96-0130)	10
1005.07C001	TPD Preliminary Approval Checklist (TPD No. 96-0131)	10
1005.07C001	TPD Preliminary Approval Checklist (TPD No. 96-0326)	10
1019.07D001	CPS Leakage Reduction Data Sheet	2
900.01C015	Division 2 - Relief Valve / Low-low Set B21-N668B (F) Relief Valve Reactor Pressure B21-N669B (F) Channel Functional Checklist	27
3823.01	ISA Ring Header Isol Valve Testing	5
8801.05D001	Corrections to Instrument Calibrations Data Sheet	10
9000.01D001	Completed Surveillance	09/08/96
9030.01C001	HPCS Drywell Pressure B21-N667C(D,G,H,) Channel Functional Checklist	24
9030.01C002	HPCS Reactor Vessel Water Low Level(2),High Level (8) B21-N673 C (D,G,H)	26
9030.01C003	NS4 Main Condenser Low Vacuum B21-N675A (B,C,D)	23

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9030.01C004	NS4 Main Steam Line Low Pressure B21-N676A (B,C,D) Channel Functional Checklist	23
9030.01C005	NS4 Reactor Vessel Water Level B21-N681A (B,C,D) Channel Functional Checklist	26
9030.01C006	RCIC Reactor Vessel Level 2 B21-N692A(B,E,F) Channel Functional Checklist	24
9030.01C007	RCIC Reactor Water Level 8 B21-N693A (B) Channel Functional Checklist	23
9030.01C008	ECCS Drywell Pressure B21-N694A (E,B,F) Channel Functional Checklist	24
9030.01C008	Completed Surveillance	08/01/97
9030.01C009	ADS Reactor Vessel Low Level 3 B21-N695A(B) Channel Functional Checklist	23
9030.01C009	Completed Surveillance	07/28/97
9030.01C010	ECCS Injection Valve Permissive - Reactor Pressure B21-N697A (B,E,F) Channel Functional Checklist	26
9030.01C011	RPS Reactor Water Low Level (3), High Level (8) B21-N680A (B,C,D) Channel Functional Checklist	24
9030.01C012	RPS Reactor Pressure High B21-N678A(B,C,D) Channel Functional Checklist	25
9030.01C013	Reactor Pressure Isolation B21-N679A(B,C,D) Channel Functional Checklist	26
9030.01C014	Division 1 - Relief Valve / Low-low Set B21-N668A (E) Relief Valve Reactor Pressure B21-N669A (E)	27
9030.01C016	ECCS Reactor Water 1 B21-N691A (E,B,F) Channel Functional Checklist	29
9030.01C016	Completed Surveillance	09/09/97
9030.01C017	SCRAM Discharge Volume (SDV) High Level C11-N601A(B,C,D) Channel Functional Checklist	28
9030.01C018	SCRAM Discharge Volume (SDV) High Water Level Rod Block C11-N602A(B) Channel Functional Checklist	29
9030.01C021	Rod Pattern Controller Low Power Setpoint C11-N6541 (B) Channel Functional Checklist	26
9030.01C022	Rod Pattern Controller High Power Setpoint C11-N654 C (D) Channel Functional Checklist	24
9030.01C023	RPS/NS4 Drywell Pressure C71-N650A(B,C,D) Channel Functional Checklist	24
9030.01C024	RPS Turbine 1st Stage Pressure C71-N652A(B,C,D) Channel Functional Checklist	28
9030.01C025	RHR Minimum Flow E12-N652A(B,C) Channel Functional Checklist	26
9030.01C026	ADS-RHR Pump Discharge Pressure E12-N655A(B,C) Channel Functional Checklist	24

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9030.01C026	Completed Surveillance	09/10/97
9030.01C027	ADS-RHR Pump Discharge Pressure E12-656A(B,C) Channel Functional Checklist	24
9030.01C027	Completed Surveillance	09/22/97
9030.01C028	RHR Containment Pressure E12-N662A(B,C,D) Channel Functional Checklist	23
9030.01C028	RHR Containment Pressure E12-N662A(B,C,D) Channel Functional Checklist	23
9030.01C029	LPCS Pmp Dsch Press-ADS E21-652, E21-653 Channel Functional Checklist	23
9030.01C029	Completed Surveillance	11/13/97
9030.01C030	LPCS Minimum Flow E21-N651 Channel Functional Checklist	24
9030.01C031	HPCS-RCIC Storage Tank Level E22-N654C(G) Channel Functional Checklist	25
9030.01C032	HPCS-Suppression Pool Water Level E22-N655C(G) Channel Functional Checklist	25
9030.01C033	HPCS Discharge Pressure, (Minimum Flow) E22-N651 (656) Channel Functional Checklist	27
9030.01C034	RCIC Steam Line Flow E31-N683A(B),E31-N684A(B) Channel Functional Checklist	30
9030.01C035	RCIC Main Steam Supply Pressure E31-N685A(B) Channel Functional Checklist	25
9030.01C036	NS4 MSIV Flow Isolation E31-686A(B,C,D) Channel Functional Checklist	24
9030.01C037	NS4 MSIV Flow Isolation E31-N687A(B,C,D) Functional Checklist	24
9030.01C038	NS4 MSIV Flow Isolation E31-N688A(B,C,D) Channel Functional Checklist	23
9030.01C039	NS4 MSIV Flow Isolation E31-N689A (B,C,D) Channel Functional Checklist	24
9030.01C040	RCIC Storage Tank Level E51-N635A(E) Channel Functional Checklist	25
9030.01C041	RCIC Turbine Exhaust Diaphragm Pressure E51-N655A (B,E,F) Channel Functional Checklist	22
9030.01C042	RCIC Suppression Pool Level E51-N636A(E) Channel Functional Checklist	24
9030.01D001	HPCS Drywell Pressure B21-N667C(D,G,H) Channel Functional Data Sheet	22
9030.01D002	HPCS Reactor Vessel Water Low Level (2), High Level (8) B21-N673C (D,G,H) Channel Functional Data Sheet	25
9030.01D003	NS4 Main Condenser Low Vacuum B21-N675A(B,C,D) Channel Functional Data Sheet	23

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9030.01D004	NS4 Main Steam Line Low Pressure B21-N676A (B,C,D) Channel Functional Data Sheet	22
9030.01D005	NS4 Reactor Vessel Water Level B21-N681A(B,C,D) Channel Functional Data Sheet	23
9030.01D006	RCIC Reactor Vessel Level 2 B21-N692A(B,E,F) Channel Functional Data Sheet	22
9030.01D007	RCIC Reactor Water Level 8 B21-N693A(B) Channel Functional Data Sheet	23
9030.01D008	ECCS Drywell Pressure B21-N694A(E,B,F) Channel Functional Data Sheet	22
9030.01D009	ADS Reactor Vessel Low Level 3 B21-695A(B) Channel Functional Data Sheet	23
9030.01D010	ECCS Injection Valve Permissive- Reactor Pressure B21-N697A(B,E,F) Channel Functional Data Sheet	26
9030.01D011	RPS Reactor Water Low Level (3), High Level (8) B21-N680A(B,C,D) Channel Functional Data Sheet	23
9030.01D012	RPS Reactor Pressure High B21-N678A (B,C,D) Channel Functional Data Sheet	22
9030.01D013	Reactor Pressure Isolation B21-N679A (B,C,D) Channel Functional Data Sheet	22
9030.01D014	Division 1 - Relief Valve & Low-Low Set B21-N668A (E) & Relief Valve Reactor Pressure B21-N669A(E) Channel Functional Data Sheet	25
9030.01D015	Div. 2- Relief Valve and Low-low Set B21-N668B(F) and Relief Valve Reactor Pressure B21-N669B(F) Channel Functional Data Sheet	24
9030.01D016	ECCS Reactor Water Level 1 B21-N691A (E,B,F) Channel Functional Data Sheet	25
9030.01D017	Scram Discharge Volume (SDV) High C11-N601A (B,C,D) Channel Functional Data	24
9030.01D018	Scram Discharge Volume (SDV) High Water Level Rod Block C-11-N602A(B) Channel Functional Data	26
9030.01D021	Rod Pattern Controller Low Power Setpoint C11-N654A (B) Channel Functional Data	27
9030.01D022	Rod Pattern Controller High Power Setpoint C11-N654C (D) Channel Functional Data	28
9030.01D023	RPS/NS4 Drywell Pressure C71-N650A(B,C,D) Channel Functional Data Sheet	23
9030.01D024	RPS Turbine 1st Stage Pressure C71-N652A (B,C,D) Channel Functional Data	23
9030.01D025	RHR Minimum Flow E12-N652A(B,C) Channel Functional Data Sheet	24

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9030.01D026	ADS-RHR Pump Discharge Pressure E12-N655A(B,C) Channel Functional Data	22
9030.01D027	ADS-RHR Pump Discharge Pressure E12-N656A(B,C) Channel Functional Data	23
9030.01D028	RHR Containment Pressure E12-N662A(B,C,D) Channel Functional Data Sheet	23
9030.01D029	LPCS Pump Dsch Press-ADS E21-N652; E21-653 Channel Functional Data Sheet	23
9030.01D030	LPCS Minimum Flow E21-N651 Channel Functional Data Sheet	22
9030.01D031	HPCS-RCIC Storage Tank Level E22-N654C(G) Channel Functional Data Sheet	24
9030.01D032	HPCS-Suppression Pool Water Level E22-N655C(G) Channel Functional Data Sheet	24
9030.01D033	HPCS Discharge Pressure (Minimum Flow) E22-N651 (N656) Channel Functional Data	23
9030.01D034	RCIC Steam Line Flow E31-N683A(B),E31-N684A(B) Channel Functional Data Sheet	26
9030.01D035	RCIC Main Steam Supply Pressure E31-N685A(B) Channel Functional Data Sheet	23
9030.01D036	NS4 MSIV Flow Isolation E31-N686A(B,C,D) Channel Functional Data Sheet	23
9030.01D037	NS4 MSIV Flow Isolation E31-N687A(B,C,D) Channel Functional Data Sheet	23
9030.01D038	NS4 MSIV Isolation E31-N688A(B,C,D) Channel Functional Data Sheet	23
9030.01D039	NS4 MSIV Flow Isolation E31-N689A(B,C,D) Channel Functional Data Sheet	22
9030.01D040	RCIC Storage Tank Level E51-N635A(E) Channel Functional Data Sheet	23
9030.01D041	RCIC Turbine Exhaust Diaphragm Pressure E51-N655A (B,E,F) Channel Functional Data Sheet	22
9030.01D042	RCIC Suppression Pool Level E51-N636A(E) Channel Functional Data	24
9030.05	Completed Surveillance	04/20/97
9030.05 C-A12-A117	Completed Surveillance	08/02/97
9030.10	Analog Trip Module (ATM) Channel Functional/ Calibration Check Instr.	30
9051.01	HPCS System Pump Operability	37
9051.01D001	HPCS System Pump Operability Data Sheet	40
9051.02	HPCS Valve Operability Test	35
9051.02D001	HPCS Valve Operability Data Sheet	32

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9051.04	HPCS Automatic Suction Shift Test	23
9051.05	HPCS Discharge Header Filled and Flow Path Verification	25
9056.01	Completed Surveillance	07/15/97
9056.04	Completed Surveillance	09/27/97
9061.11C022	Completed Surveillance	11/05/96
9430.30 C-A11-A111	Completed Surveillance	08/22/98
9430.30 C-A12-A111	Completed Surveillance	08/22/98
9430.30 C-A12-A117	Completed Surveillance	08/22/98
9430.30 D-A11-A111	Completed Surveillance	01/02/97
9430.30 D-A12-A111	Completed Surveillance	01/02/97
9430.30 D-A12-A117	Completed Surveillance	01/02/97
9430.30	NSPS Untested Islands/Calibration 1-999 Second Time Delay	34
9430.30, M001	Untested Islands/Calibration 1-999 Second Time Delay Impact Matrix	2
9433.03	ECCS Reactor Vessel Water Level B21-N095A,B Channel Calibration	34
9433.03	ECCS Reactor Vessel Water Level B21-N091A	35
9433.03	Completed Surveillance	08/31/98
9433.03D001	ECCS Reactor Vessel Water Level B21-091A Calibration Data Sheet	33
9433.04	Completed Surveillance	07/10/97
9433.05	ECCS Reactor Vessel Water Level B21-091E Channel Calibration	34
9433.05	Completed Surveillance	09/01/98
9433.05D001	ECCS Reactor Water Level B21-N091E Channel Calibration Data Sheet	33
9433.06	Completed Surveillance	12/07/96
9433.07	ECCS Reactor Vessel Water Level B21-N073(G) Channel Calibration	34
9433.07D001	ECCS Reactor Vessel Water Level B21-N073C Channel Calibration Data	32
9433.07D002	ECCS Reactor Vessel Water Level B21-N073G Channel Calibration Data	32
9433.08	ECCS Reactor Vessel Water Level B21-N037D(H) Channel Calibration	33
9433.08D001	ECCS Reactor Vessel Water Level B21-NO73D Channel Calibration Data	32
9433.08D002	ECCS Reactor Vessel Water Level B21-N073H Channel Calibration Data	32
9433.09	Completed Surveillance	05/22/92
9433.09	Completed Surveillance	04/07/94

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9433.09	Completed Surveillance	09/13/94
9433.09	Completed Surveillance	01/23/96
9433.09	Completed Surveillance (95A)	09/04/97
9433.09	Completed Surveillance (95B)	09/04/97
9433.09	Completed Surveillance	01/16/98
9433.09D001	ECCS Reactor Vessel Water Level B21-M095A Channel Calibration Data Sheet	34
9433.10	ECCS Drywell Pressure B21-N094A,E Channel Calibration	34
9433.10	Completed Surveillance	07/24/92
9433.10	Completed Surveillance	07/27/92
9433.10	Completed Surveillance	01/05/94
9433.10	Completed Surveillance	06/21/95
9433.10	Completed Surveillance (94A)	06/26/97
9433.10	Completed Surveillance (94E)	05/06/97
9433.10D001	ECCS Drywell Pressure B21-N094A Channel Calibration Data Sheet	34
9433.11	Completed Surveillance	06/29/94
9433.11	Completed Surveillance	01/14/97
9433.11	Completed Surveillance	04/02/97
9433.11	Completed Surveillance (94B)	04/02/97
9433.11	Completed Surveillance (94F)	01/15/97
9433.12	ECCS Drywell Pressure B21-N067C(D,G,H) Channel Calibration	31
9433.12D001	ECCS Drywell Pressure B21-N067C Channel Calibration Data Sheet	31
9433.12D002	ECCS Drywell Pressure B21-N067D Channel Calibration Data Sheet	31
9433.12D003	ECCS Drywell Pressure B21-N067G Channel Calibration Data Sheet	31
9433.12D004	ECCS Drywell Pressure B21-N067H Channel Calibration Data Sheet	31
9433.13	ECCS Reactor Steam Dome Pressure B21-N097A(B) Channel Calibration	32
9433.13D001	ECCS Reactor Steam Dome Pressure B21-N097A Channel Calibration Data	32
9433.13D002	ECCS Reactor Steam Dome Pressure B21-N097B Channel Calibration Data	32
9433.15	HPCS RCIC Storage Tank Level E22-N054C(G) Channel Calibration	32
9433.15D001	HPCS RCIC Storage Tank Level E22-N054C Channel Calibration Data	34
9433.15D002	HPCS RCIC Storage Tank Level E22-N054G Channel Calibration Data	30
9433.17	HPCS Suppression Pool Water Level E22-N055C(G) Channel Calibration	32



<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9433.17D001	HPCS Suppression Pool Water Level E22-N055C (G) Channel Calibration Data	32
9433.19	ECCS RHR Pump Disch Press ADS E12-N055A, B, C and E12-N056A,B,C Channel Calibration	32
9433.19	Completed Surveillance	06/28/94
9433.19	Completed Surveillance	11/14/95
9433.19	Completed Surveillance (55A)	08/12/97
9433.19	Completed Surveillance (55B)	01/14/98
9433.19	Completed Surveillance (55C)	01/14/98
9433.19	Completed Surveillance (56A)	08/12/97
9433.19	Completed Surveillance (56B)	01/15/98
9433.19	Completed Surveillance (56C)	01/14/98
9433.19D001	ECCS RHR Pump Disch Press ADS E12-N055A, B, C/ 56A, B, C Channel Calibration Data Sheet	32
9433.20	ECCS LPCS Pump Dsch Press ADS E21-N052/52 Channel Calibration	32
9433.20	Completed Surveillance	10/31/92
9433.20	Completed Surveillance	05/26/94
9433.20	Completed Surveillance	11/09/95
9433.20	Completed Surveillance	08/12/97
9433.20	Completed Surveillance (52)	08/12/97
9433.20	Completed Surveillance (53)	08/12/97
9433.20D001	ECCS LPCS Pump Disch Press 1E12-N051 Channel Calibration Data Sheet	32
9433.22	HPCS Flow E-22-N056 Channel Calibration	31
9433.22D001	HPCS Flow E-22-N056 Channel Calibration Data Sheet	31
9433.23	ECCS HPCS Pump Discharge Pressure E22-N051 Channel Calibration	30
9433.23D001	ECCS HPCS Pump Discharge Pressure E22-N051 Channel Calibration Data Sheet	30
9433.36	High Pressure Core Pray System Response Time Test	32
9433.36D001	High Pressure Core Spray System Response Time Data Sheet	32
9442.02	Completed Surveillance	09/03/98
9442.05	Completed Surveillance	09/03/98
9456.04	Completed Surveillance IA085	07/25/97
9456.04	Completed Surveillance IA084	07/26/97
9843.01	ISI Category "A" Valve Leak Rate Test	32
9843.01C009	Leak Rate Testing of RCIC Head Spray (1E51F013 & 1E12F023)	25
9843.01D001	RCSPIV/Non-RCSPIV Leak Rate Test	29
9843.01D002	RCSPIV/Non-RCSPIV Leak Test Via Flowmeter	24

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9843.01F002	ISI Category "A" Valve Leak Rate Test Results	21
9843.01F003	ISI CATEGORY "A" VALVE IDENTIFIED LEAKAGE	23
9843.01V001	Leak Rate Testing of LPCI "A" Injection	26
9843.01V002	Leak Rate Testing of LPCS Injection	26
9843.01V003	Leak Rate Testing of LPCI "B" Injection	26
9843.01V004	Leak Rate Testing of LPCI "C" Injection	26
9843.01V005	Leak Rate Testing of HPCS Injection	25
9843.01V006	Leak Rate Testing of RHR Shutdown Suction	23
9843.01V007	Leak Rate Testing of RHR "A" to FW & FW "A"	23
9843.01V008	Leak Rate Testing of RHR "B" to FW & FW "B"	24
9843.01V010	Leak Rate Testing of RPV Head Vent to Drywell Pump	25
9843.01V013	Leak Rate Testing of Main Steam Drain & MSIV Bypass	23
9843.01V014	Leak Rate Testing of RWCU From REV	23
9843.01V015	Leak Rate Testing of RCIC Head Spray ( 1E51F066)	25
9843.01V016	Leak Rate Testing of Div. I RX Level Keepfill System (1C11F376A & 1C11F377A)	0
9843.01V017	Leak Rate Testing of Div II RX Level Keepfill System (1C11F3768 & 1C11F377B)	0
9861.02	Local Leak Rate Testing Requirements And Type C (Air) Local Rate Testing	42
9861.02D001	LLRT Data Sheet For 1MC-001 - Containment Equipment Hatch Test Connection	28
9861.02D002	LLRT Data Sheet For 1MC009	34
9861.02D003	LLRT Data Sheet For 1MC010	35
9861.02D004	LLRT Data Sheet for 1MC014 (S-MC014) RHR SDC Suction	30
9861.02D005	LLRT Data Sheet for 1MC015 - RHR A LPCI Injection	28
9861.02D006	LLRT Data Sheet for 1MC016 - RHR B LPCI Injection	27
9861.02D013	LLRT Data Sheet for 1MC035 - HPCS Injection	26
9861.02D014	LLRT Data Sheet for 1MC036 - LPCS Injection	26
9861.02D016	LLRT Data Sheet for 1MC042 (S-MC042)	26
9861.02D017	LLRT Data Sheet for 1MC043 (S-MC043)	28
9861.02D018	LLRT Data Sheet for Retest/Pretest/Special Test	27
9861.02D019	LLRT Data Sheet for 1MC045 - Main Steam Line Drain	28
9861.02D020	LLRT Data Sheet for 1MC046 (S-MC046)	26
9861.02D021	LLRT Data Sheet for 1MC047 - Containment/Drywell CC Return	28
9861.02D022	LLRT Data Sheet for 1MC048 - Containment SX Supply	27
9861.02D023	LLRT Data Sheet for 1MC049 - Containment Breathing Air	27
9861.02D024	LLRT Data Sheet for 1MC050 MC to Containment	26
9861.02D025	LLRT Data Sheet for 1MC052 FC Return from Containment	30

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9861.02D026	LLRT Data Sheet for 1MC053 FC Supply to Containment	30
9861.02D027	LLRT Data Sheet for 1MC056 Fire Protection to Containment	23
9861.02D028	LLRT Data Sheet for 1MC057 - Containment Instrument Air Supply	23
9861.02D029	LLRT Data Sheet for 1MC058 (S-MC058)	22
9861.02D030	LLRT Data Sheet for 1MC059 (S-MC059)	23
9861.02D031	LLRT Data Sheet for 1MC060 (S-MC060)	22
9861.02D032	LLRT Data Sheet for 1MC061 (S-MC061)	21
9861.02D033	LLRT Data Sheet for 1MC062/1MC166 - Hydrogen Recombiner 1SB	22
9861.02D034	LLRT Data Sheet for 1MC063 (S-MC063)	21
9861.02D035	LLRT Data Sheet for 1MC064 (S-MC064)	21
9861.02D036	LLRT Data Sheet for 1MC065 - RWCU to Radwaste	23
9861.02D037	LLRT Data Sheet for 1MC067 (S-MC067)	21
9861.02D038	LLRT Data Sheet for 1MC068 - Post Accident Sample System	24
9861.02D039	LLRT Data Sheet for 1MC069 - Equipment Drain Discharge	22
9861.02D040	LLRT Data Sheet for 1MC070 - Floor Drain Discharge	22
9861.02D043	LLRT Data Sheet for 1MC078 - SX to RR Pumps	22
9861.02D044	LLRT Data Sheet for 1MC079 - SF Return to Suppression Pool	21
9861.02D045	LLRT Data Sheet for 1MC081 Fire Protection to Containment	22
9861.02D046	LLRT Data Sheet for 1MC082 Fire Protection to Containment	22
9861.02D047	LLRT Data Sheet for 1MC085 (S-MC085)	21
9861.02D048	LLRT Data Sheet for 1MC086 (S-MC086)	21
9861.02D049	LLRT Data Sheet for 1MC088 - SX From RR Pumps	22
9861.02D050	LLRT Data Sheet for 1MC101 (S-MC101 & S-MC101001)	21
9861.02D051	LLRT Data Sheet for 1MC102 (S-MC102 & S-MC102001)	21
9861.02D052	LLRT Data Sheet for 1MC103 (S-MC103)	21
9861.02D053	LLRT Data Sheet for 1MC104 (S-MC104)	21
9861.02D054	LLRT Data Sheet for 1MC-106 - Containment HVAC Exhaust	22
9861.02D059	LLRT Data Sheet for 1MC-113 - Containment HVAC Supply	22
9861.02D062	LLRT Data Sheet for 1MC-152 - ILRT Test Connections	22
9861.02D063	LLRT Data Sheet for 1MC-173 - H2/O2 Monitor 1SB	22
9861.02D066	LLRT Data Sheet for 1MC-169 - Containment Supply Air Cooler Instrument	22
9861.02D067	LLRT Data Sheet for 1MC-173 - H2/O2 Monitor 1SA	23
9861.02D073	LLRT Data Sheet for 1MC204 - Containment SX Return	22
9861.02D074	LLRT Data Sheet for 1MC205 - Containment SX Supply	22
9861.02D075	LLRT Data Sheet for 1MC206 (S-MC206)	21
9861.02D076	LLRT Data Sheet for 1MC208 (S-MC208)	21
9861.02D077	LLRT Data Sheet for 1MC210 - Post Accident Sample System	22

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9861.05	Water Leak Rate Testing	24
9861.05D001	RHR A/LPCS Water Leak Rate Test Data Sheet (S-MC021K01 & S-MC038K04)	24
9861.05D002	RHR B & RHR C Water Leak Rate Test Data Sheet (S-MC025K02 & S-MC023K03)	24
9861.05D003	HPCS Water Leak Test Data Sheet (S-MC037K05)	23
9861.05D004	RCIC Water Leak Rate Test Data Sheet (S-MC040K06)	24
9861.05D010	RCIC Turbine Exhaust Water Leak Rate Test Data Sheet (S-MC039K12)	23
9861.05D011	SF Suction Line Water Leak Rate Test Data Sheet (S-MC034K13)	21
9861.05D012	Water Test Data Sheet for Retest/Pretest/Special TEST	22
9864.01	Excess Flow Check Valve Operability Test	35
9864.01D001	Low Pressure Excess Flow Check Valve Test Data Sheet for 1E22-F332	28
9864.01D002	Low Pressure Excess Flow Check Valve Test Data Sheet for 1E51-F377B	27
9864.01D003	Low Pressure Excess Flow Check Valve Test Data Sheet for 1CM002B	26
9864.01D004	Low Pressure Excess Flow Check Valve Test Data Sheet for 1SM008	28
9864.01D005	Low Pressure Excess Flow Check Valve Test Data Sheet for 1SM011	24
9864.01D006	Low Pressure Excess Flow Check Valve Test Data Sheet for 1CM051	24
9864.01D007	Low Pressure Excess Flow Check Valve Test Data Sheet for 1CM053	24
9864.01D008	Low Pressure Excess Flow Check Valve Test Data Sheet for 1CM066	23
9864.01D009	Low Pressure Excess Flow Check Valve Test Data Sheet for 1CM067	23
9864.01D010	Low Pressure Excess Flow Check Valve Test Data Sheet for 1E22-F330	24
9864.01D011	Low Pressure Excess Flow Check Valve Test Data Sheet for 1CM003A	23
9864.01D012	Low Pressure Excess Flow Check Valve Test Data Sheet for 1CM002A	23
9864.01D013	Low Pressure Excess Flow Check Valve Test Data Sheet for 1CM003B	23
9864.01D014	Low Pressure Excess Flow Check Valve Test Data Sheet for 1sm009	23

<b>CPS Document Number</b>	<b>Description</b>	<b>Revision/ Date</b>
9864.01D015	Low Pressure Excess Flow Check Valve Test Data Sheet for 1SM010	23
9864.01D016	Low Pressure Excess Flow Check Valve Test Data Sheet for 1E51-F377A	24
9864.01D017	Low Pressure Excess Flow Check Valve Test Data Sheet for 1VR016A	23
9864.01D018	Low Pressure Excess Flow Check Valve Test Data Sheet for 1VR016B	23
9864.01D019	Low Pressure Excess Flow Check Valve Test Data Sheet for 1VR018A	23
9864.01D020	Low Pressure Excess Flow Check Valve Test Data Sheet for 1VG018B	23
9864.01D021	Low Pressure Excess Flow Check Valve Test Data for 1VG056B	24
9864.01D022	Low Pressure Excess Flow Check Valve Test Data Sheet for 1VG057B	23